

# Torus Glued Comparison of Level 4 Eigenfunctions and Level 3 Eigenfunctions By Averaging (First 150)

SPUR 2016

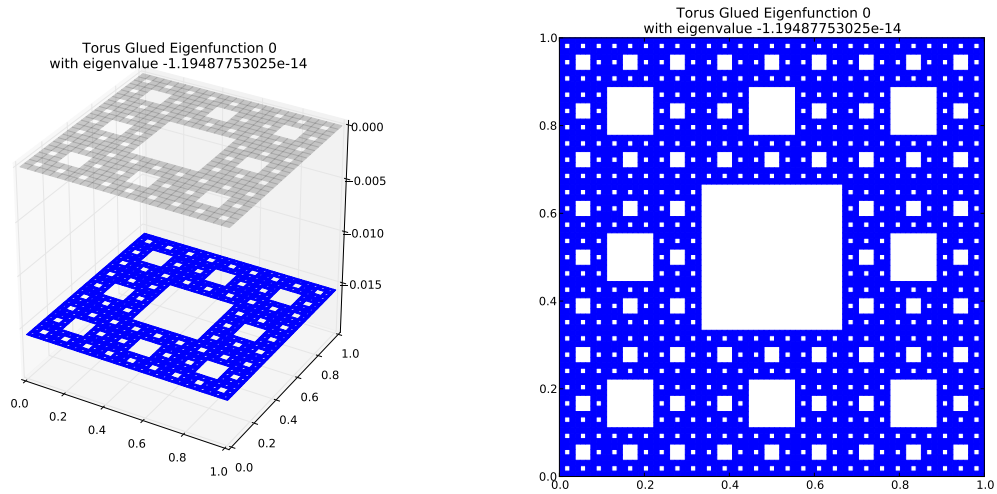
May 23, 2018

## Key to Dot Value

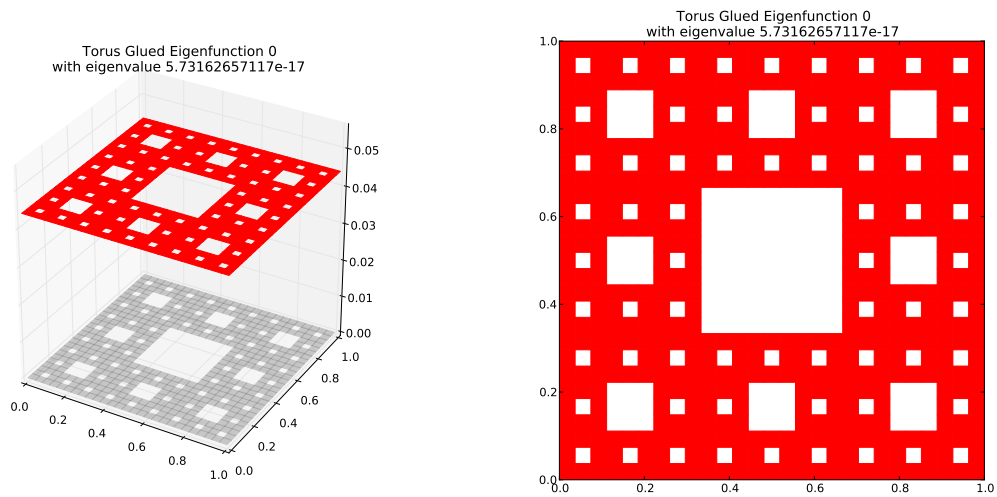
Dot values are in general between 0 and 1; those close to 0 are better matches, while those close to 1 are not good matches. Dot value 2 indicates the eigenvalue averages to the zero function. Dot value 3 indicates the projection onto the closest eigenspace is zero.

# 1 $M = 4$ Eigenfunction 0

$M = 4$  Eigenfunction 0 has eigenvalue  $-1.19487753025e-14$



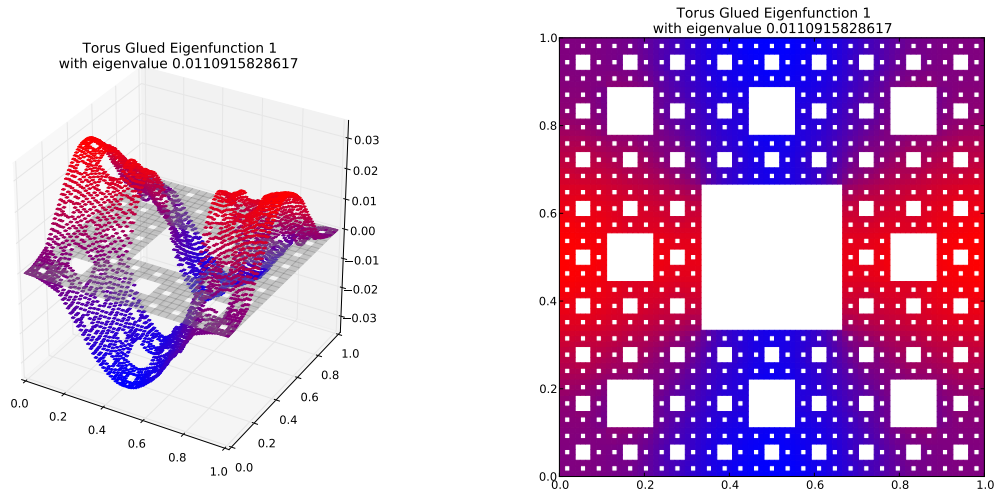
Compare to  $m = 3$  eigenspace with eigenvalue  $5.73162657117e-17$



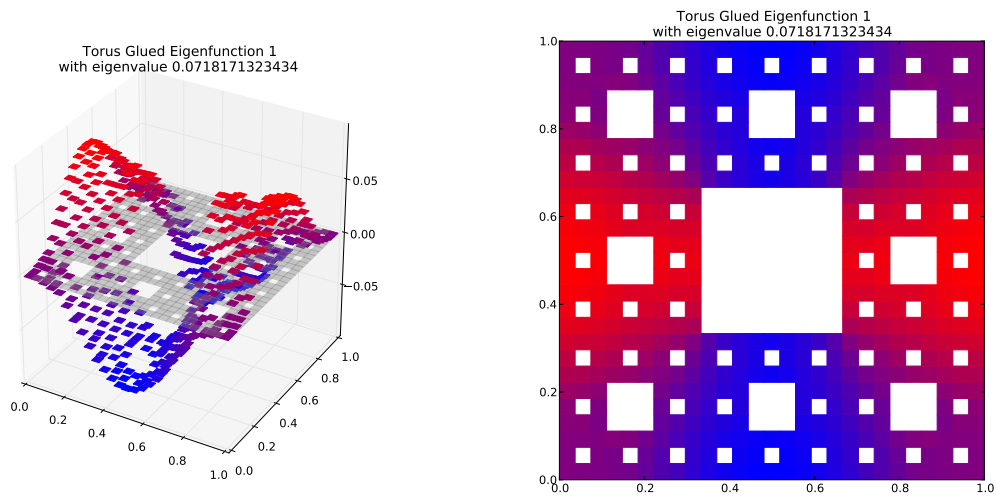
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = -208.470931491$   
Dot Value:  $1.1102230246251565e-16$

## 2 $M = 4$ Eigenfunction 1

$M = 4$  Eigenfunction 1 has eigenvalue 0.0110915828617



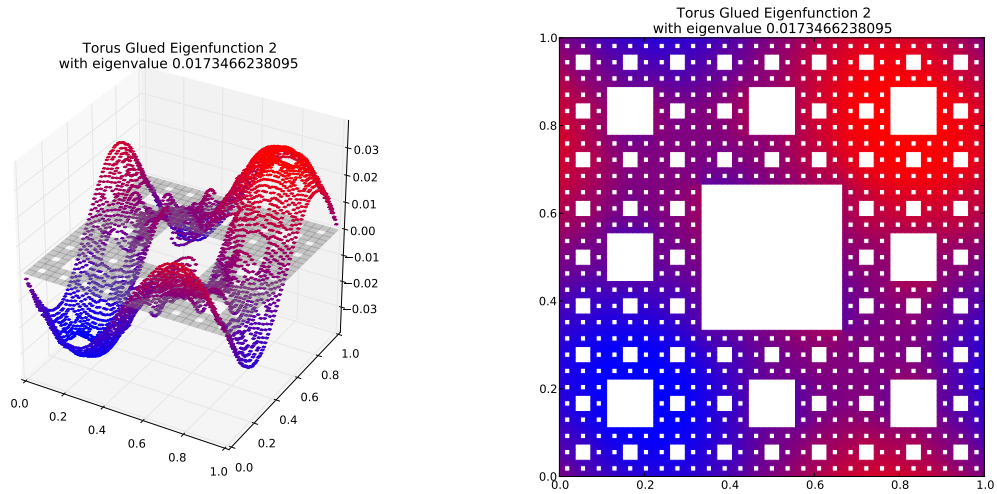
Compare to  $m = 3$  eigenspace with eigenvalue 0.0718171323434



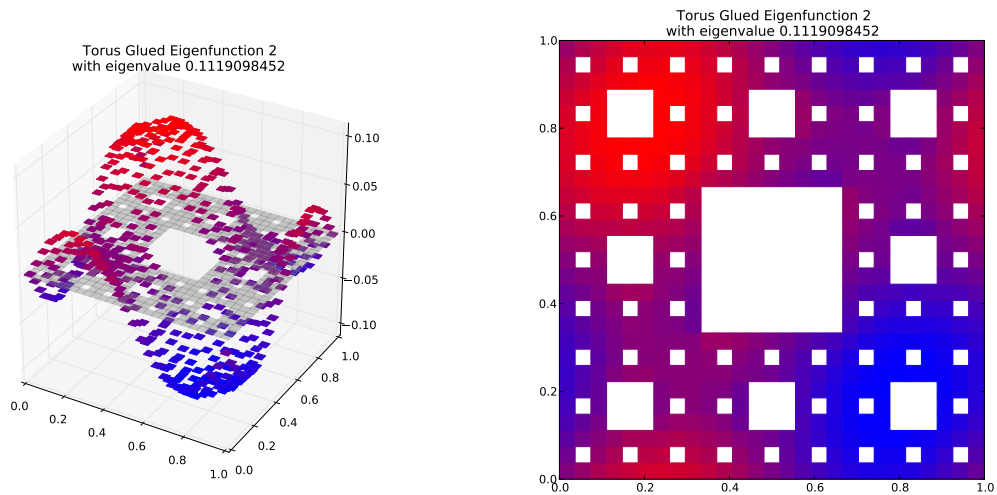
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.154442018217$   
Dot Value: 3.222830612537031e-05

### 3 $M = 4$ Eigenfunction 2

$M = 4$  Eigenfunction 2 has eigenvalue 0.0173466238095



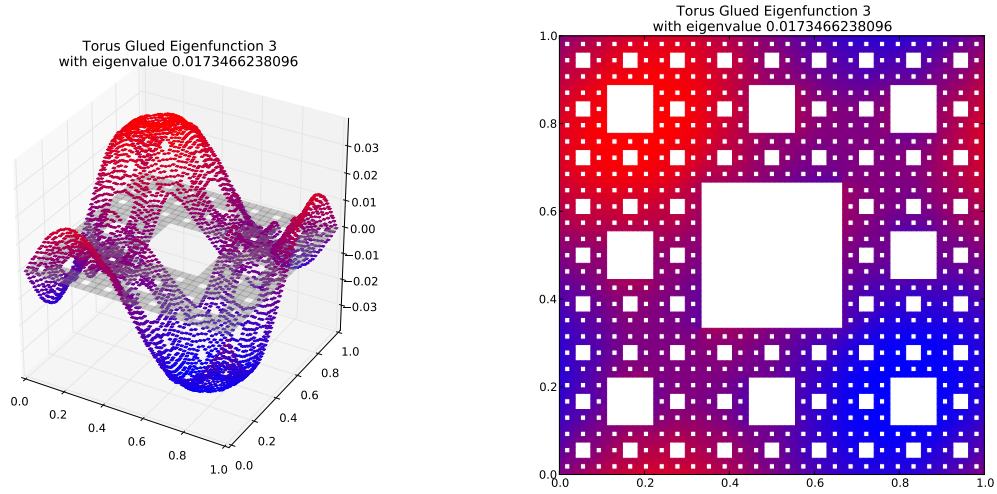
Compare to  $m = 3$  eigenspace with eigenvalue 0.1119098452  
(Note: Eigenspace Dimension  $> 1$ )



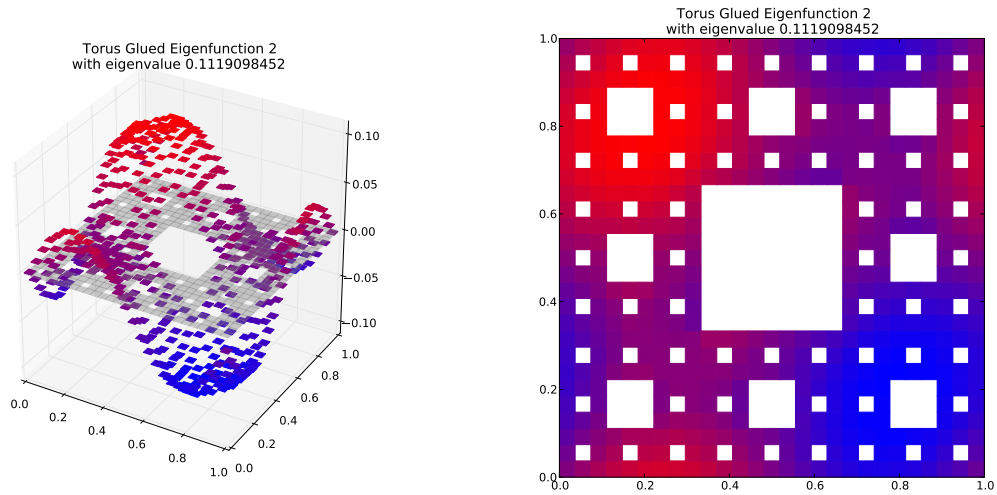
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.155005341832$   
Dot Value: 0.00018518768128994445

## 4 $M = 4$ Eigenfunction 3

$M = 4$  Eigenfunction 3 has eigenvalue 0.0173466238096



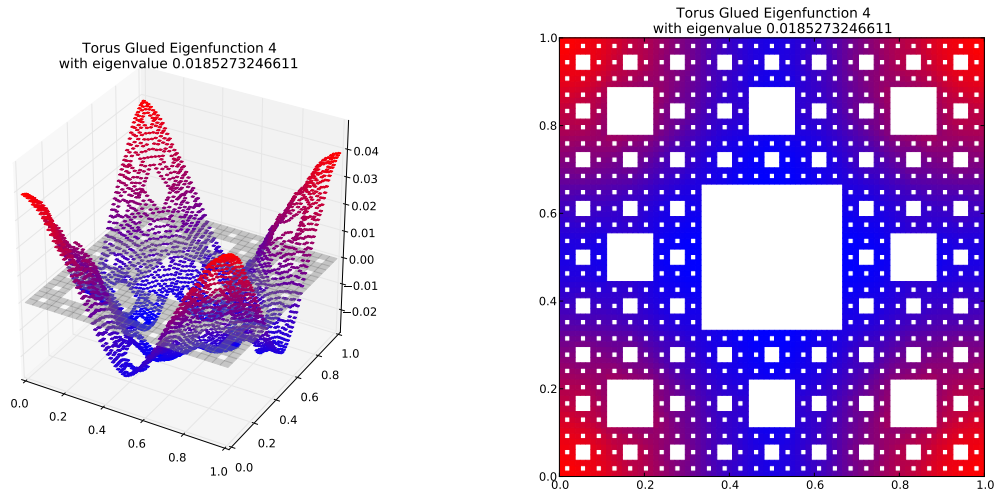
Compare to  $m = 3$  eigenspace with eigenvalue 0.1119098452  
(Note: Eigenspace Dimension  $> 1$ )



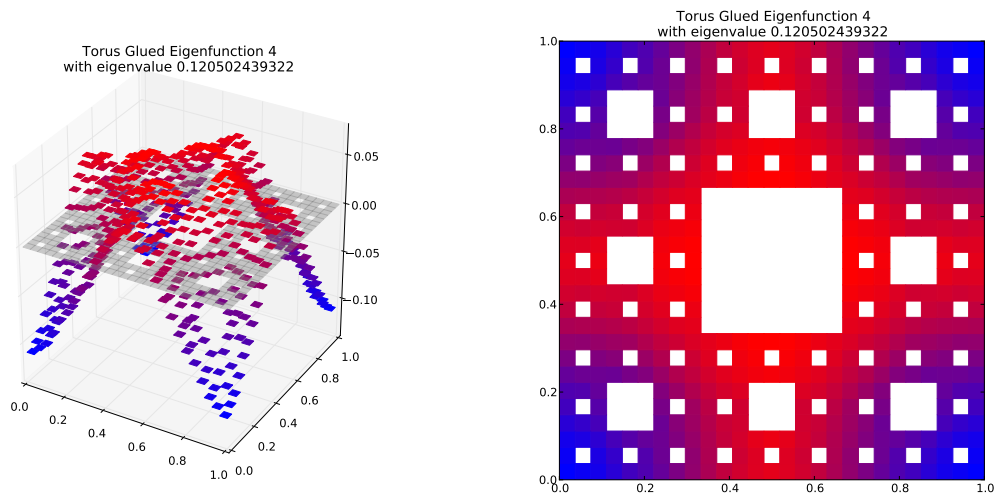
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.155005341832$   
Dot Value: 0.0001851876812901665

## 5 $M = 4$ Eigenfunction 4

$M = 4$  Eigenfunction 4 has eigenvalue 0.0185273246611



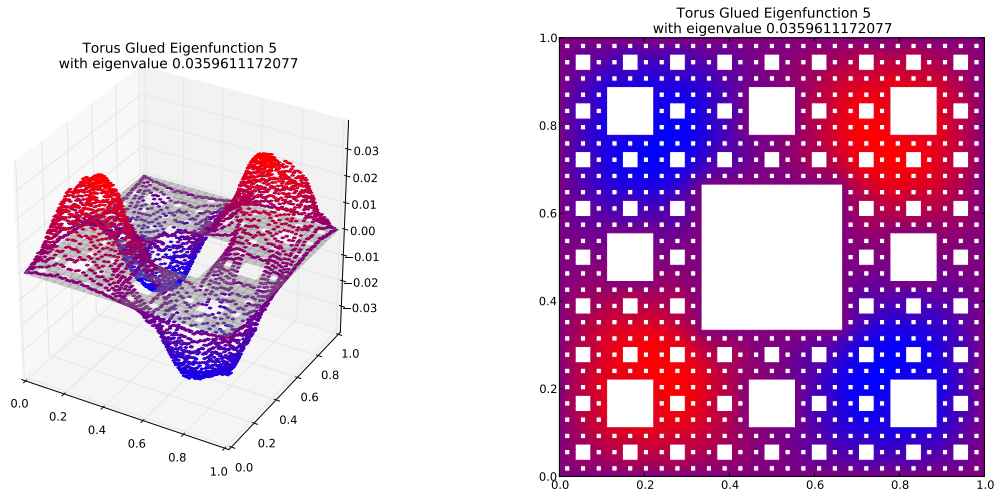
Compare to  $m = 3$  eigenspace with eigenvalue 0.120502439322



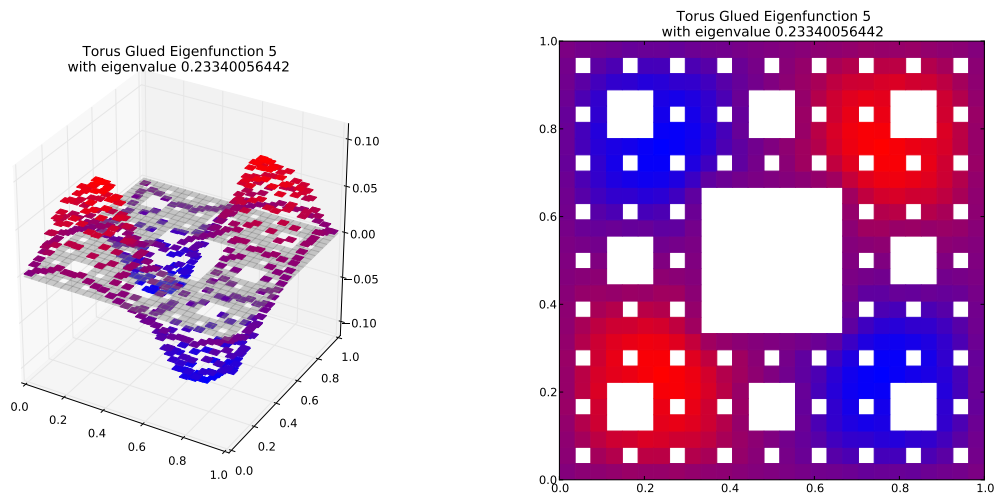
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.153750619202$   
Dot Value: 8.893295618672692e-05

## 6 $M = 4$ Eigenfunction 5

$M = 4$  Eigenfunction 5 has eigenvalue 0.0359611172077



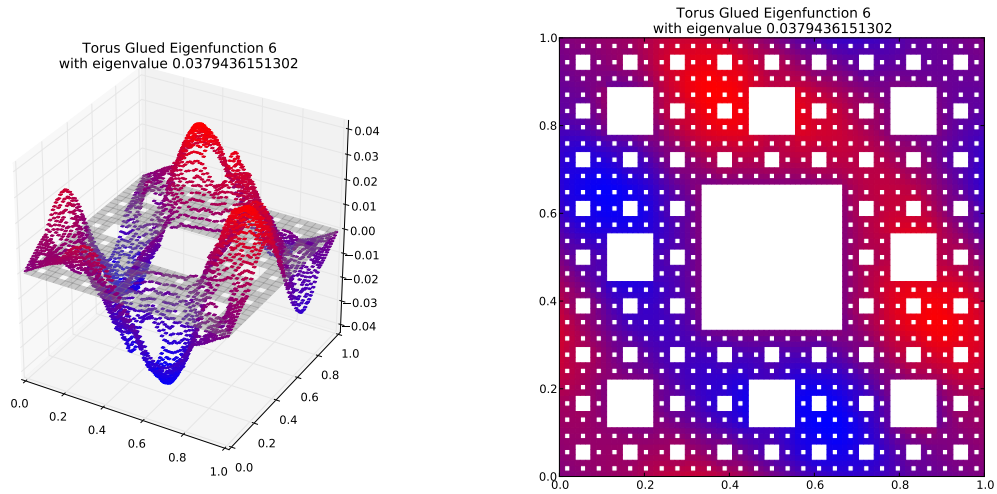
Compare to  $m = 3$  eigenspace with eigenvalue 0.23340056442



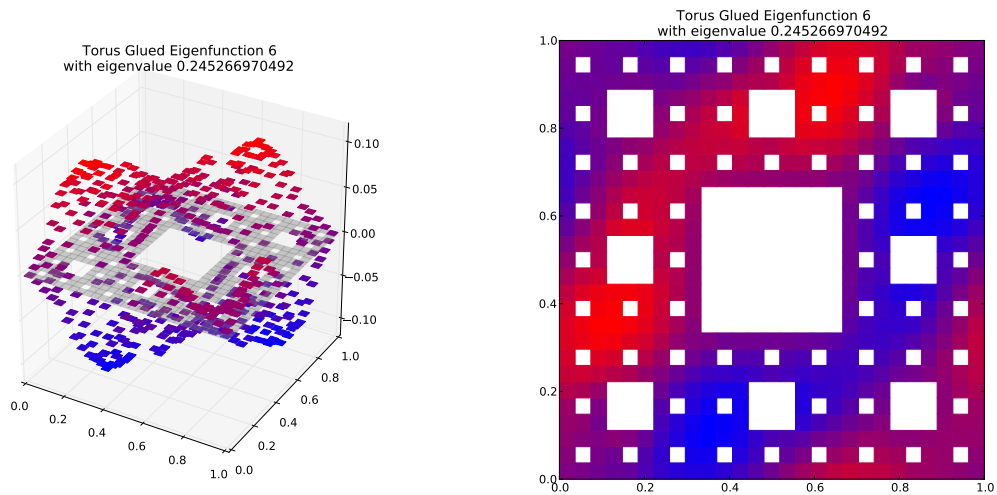
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.154074679713$   
Dot Value: 0.00017167451076360862

## 7 $M = 4$ Eigenfunction 6

$M = 4$  Eigenfunction 6 has eigenvalue 0.0379436151302



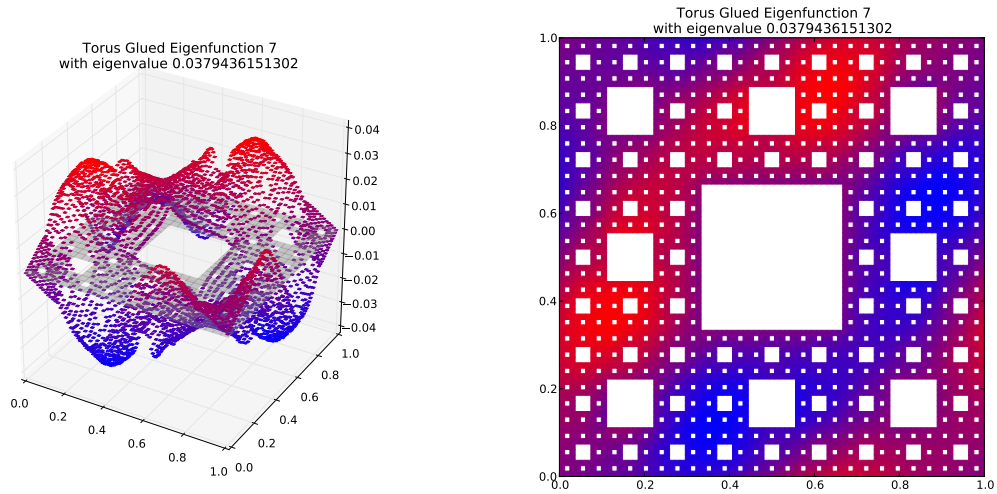
Compare to  $m = 3$  eigenspace with eigenvalue 0.245266970492  
(Note: Eigenspace Dimension  $> 1$ )



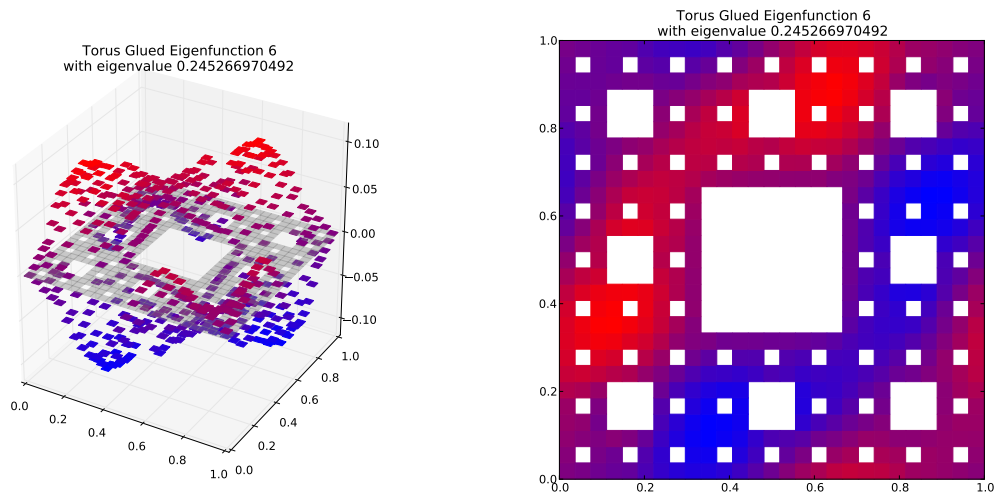
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.154703322074$   
Dot Value: 0.0002862232125017128

## 8 $M = 4$ Eigenfunction 7

$M = 4$  Eigenfunction 7 has eigenvalue 0.0379436151302



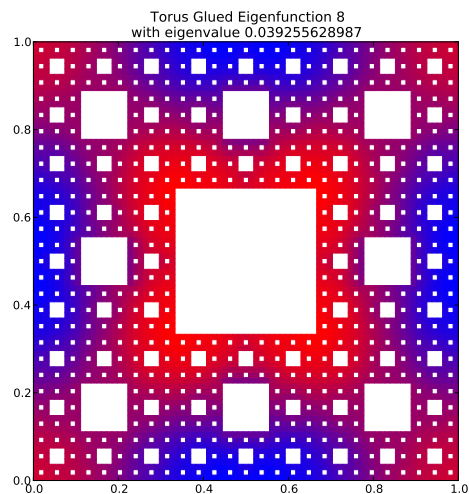
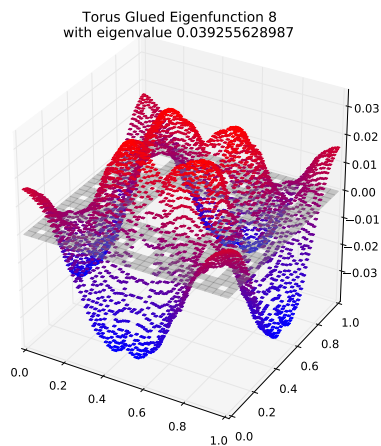
Compare to  $m = 3$  eigenspace with eigenvalue 0.245266970492  
(Note: Eigenspace Dimension  $> 1$ )



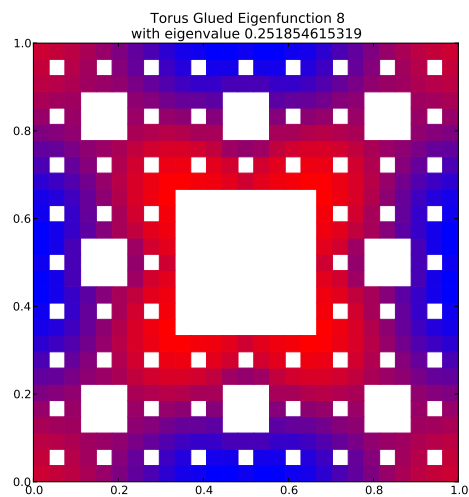
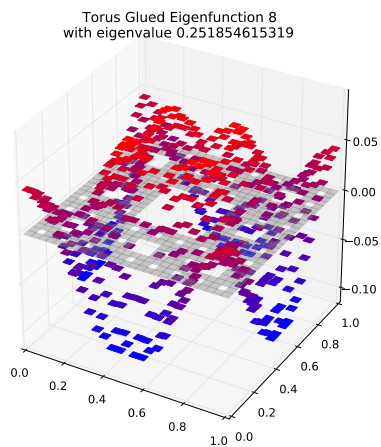
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.154703322074$   
Dot Value: 0.00028622321250248994

## 9 $M = 4$ Eigenfunction 8

$M = 4$  Eigenfunction 8 has eigenvalue 0.039255628987



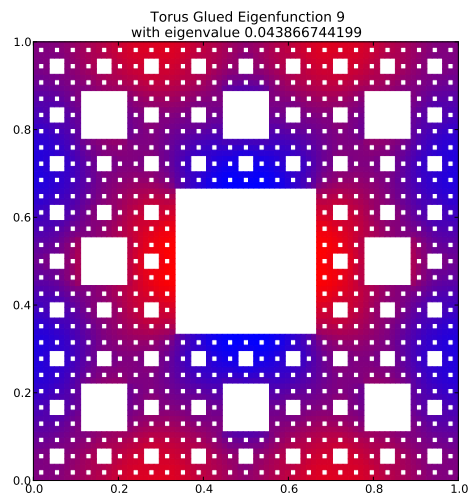
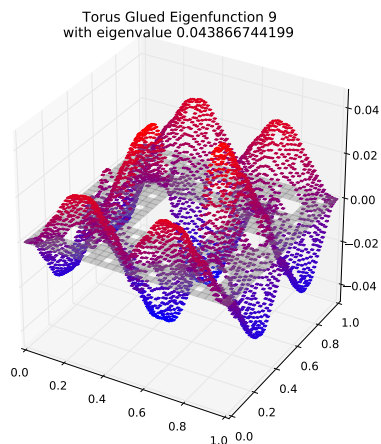
Compare to  $m = 3$  eigenspace with eigenvalue 0.251854615319



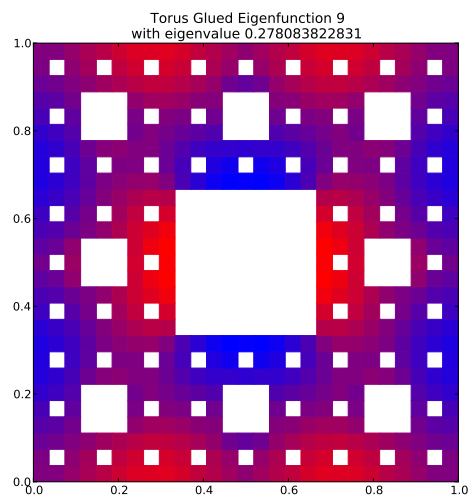
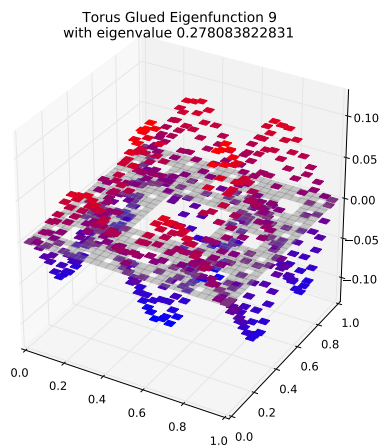
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.155866228369$   
Dot Value: 0.000200780920758592

## 10 $M = 4$ Eigenfunction 9

$M = 4$  Eigenfunction 9 has eigenvalue 0.043866744199



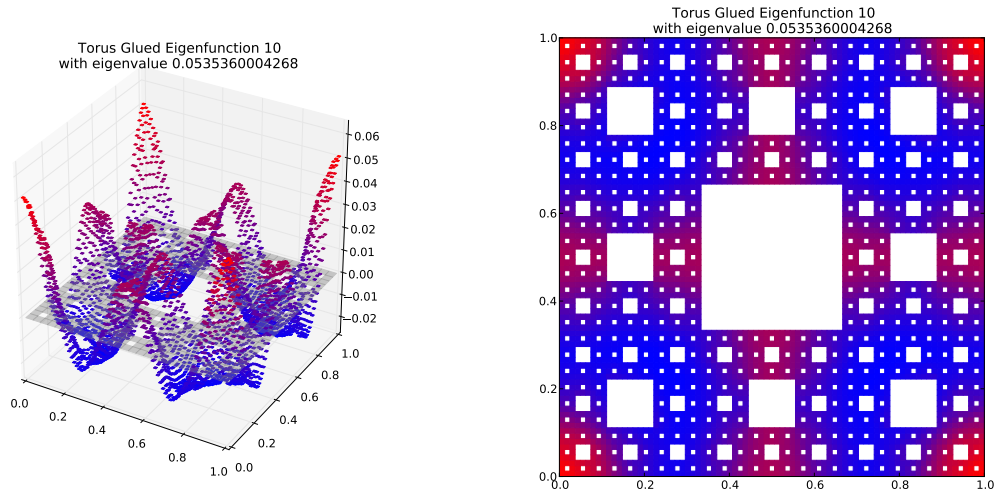
Compare to  $m = 3$  eigenspace with eigenvalue 0.278083822831



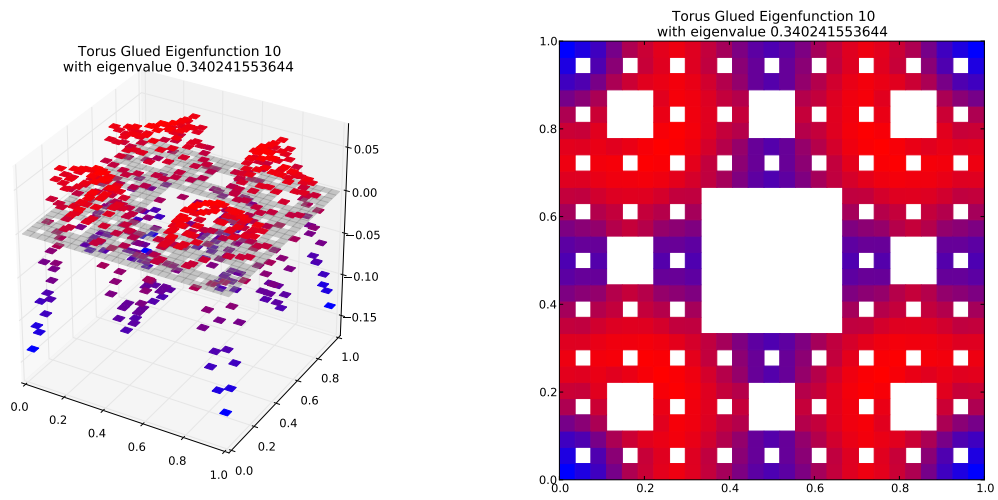
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.157746480009$   
Dot Value: 0.00019881984987102364

# 11 $M = 4$ Eigenfunction 10

$M = 4$  Eigenfunction 10 has eigenvalue 0.0535360004268



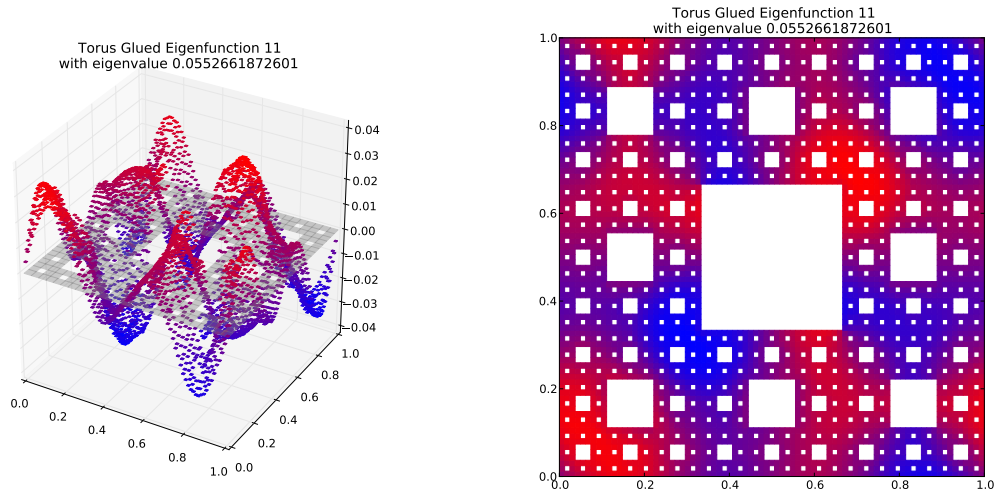
Compare to  $m = 3$  eigenspace with eigenvalue 0.340241553644



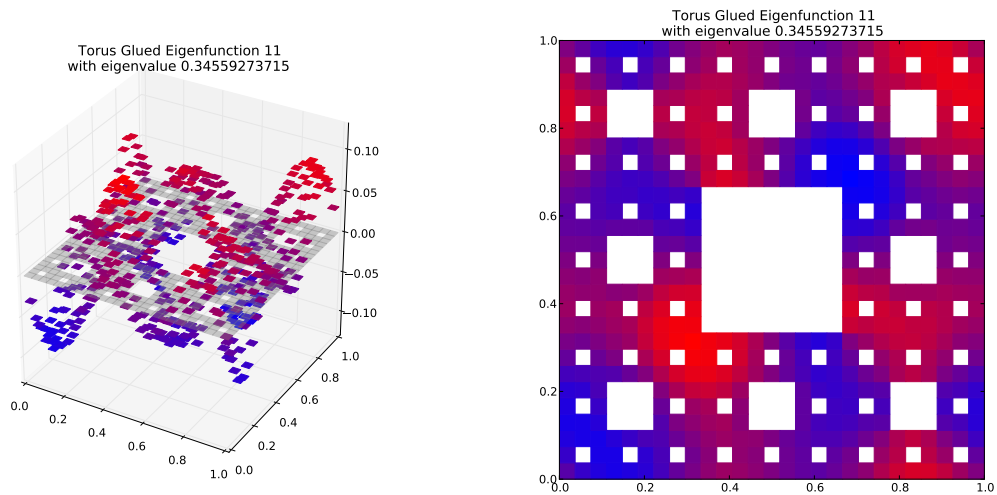
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.157347037284$   
Dot Value: 0.000557126383956521

## 12 $M = 4$ Eigenfunction 11

$M = 4$  Eigenfunction 11 has eigenvalue 0.0552661872601



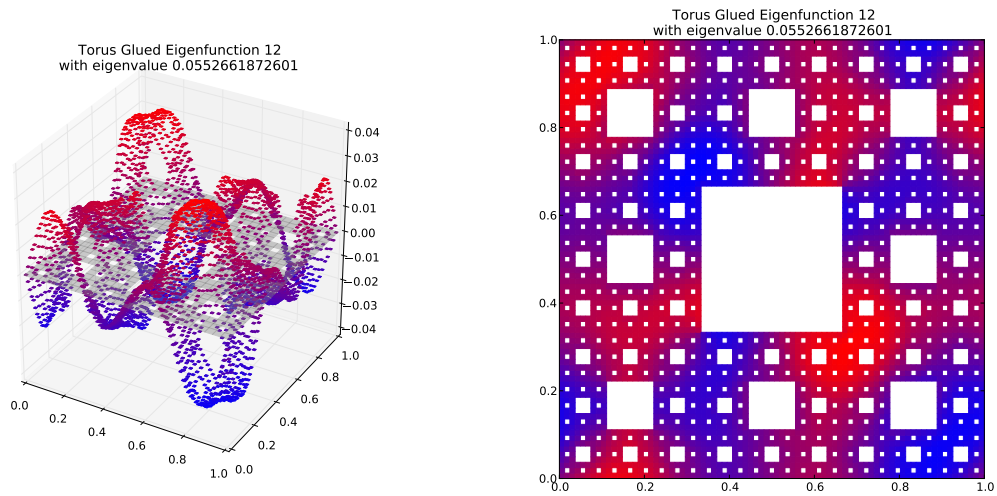
Compare to  $m = 3$  eigenspace with eigenvalue 0.34559273715  
(Note: Eigenspace Dimension  $> 1$ )



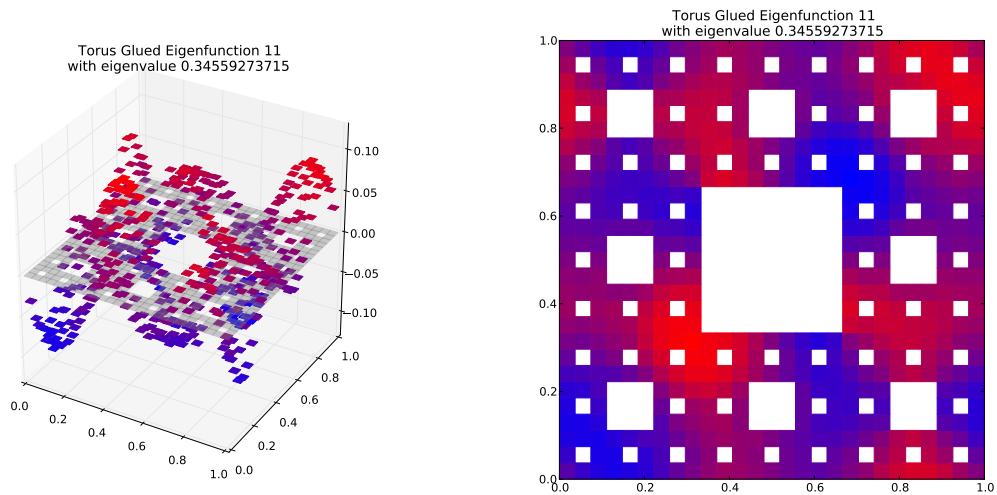
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.159917096973$   
Dot Value: 0.0022951517196995175

### 13 $M = 4$ Eigenfunction 12

$M = 4$  Eigenfunction 12 has eigenvalue 0.0552661872601



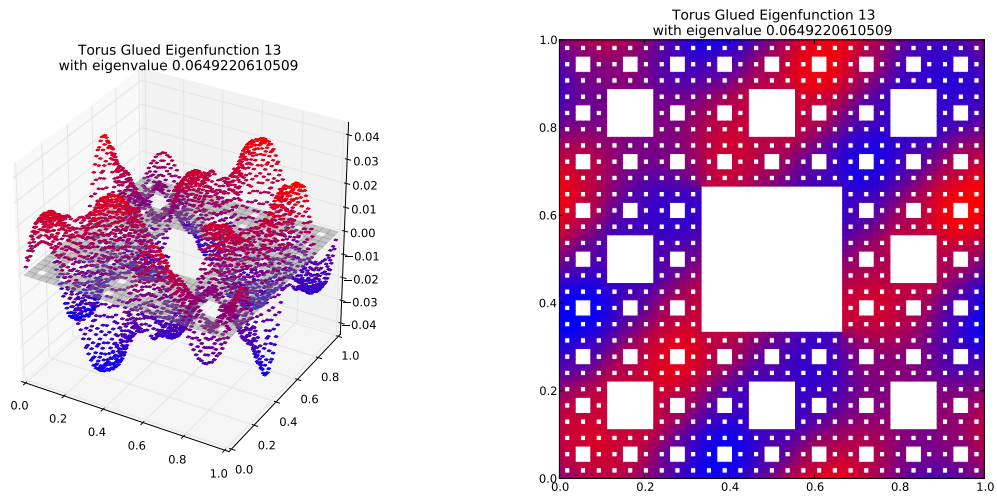
Compare to  $m = 3$  eigenspace with eigenvalue 0.34559273715  
(Note: Eigenspace Dimension  $> 1$ )



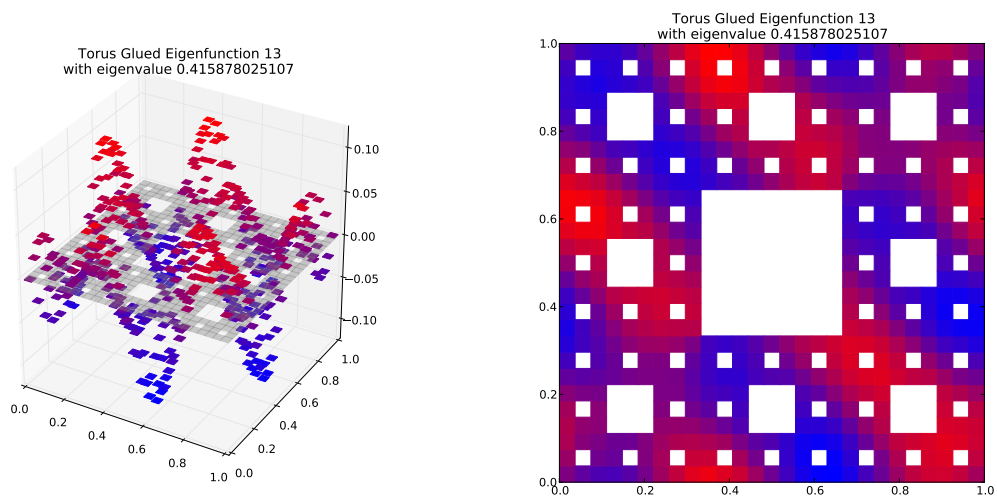
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.159917096973$   
Dot Value: 0.0022951517196986293

## 14 $M = 4$ Eigenfunction 13

$M = 4$  Eigenfunction 13 has eigenvalue 0.0649220610509



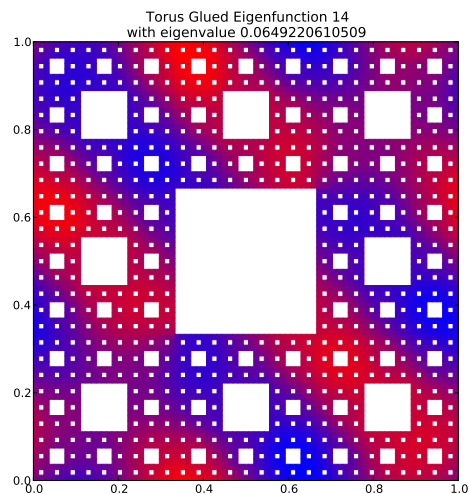
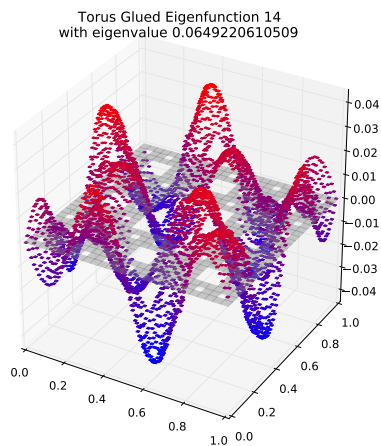
Compare to  $m = 3$  eigenspace with eigenvalue 0.415878025107  
(Note: Eigenspace Dimension  $> 1$ )



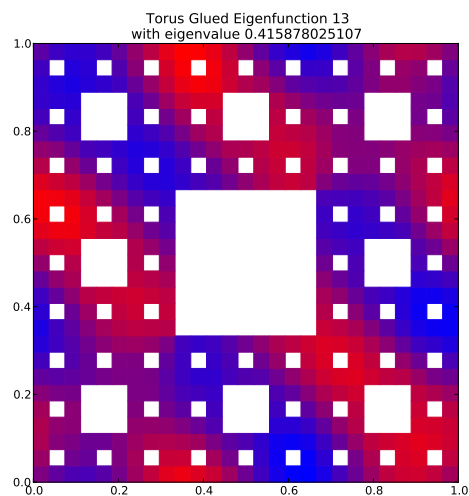
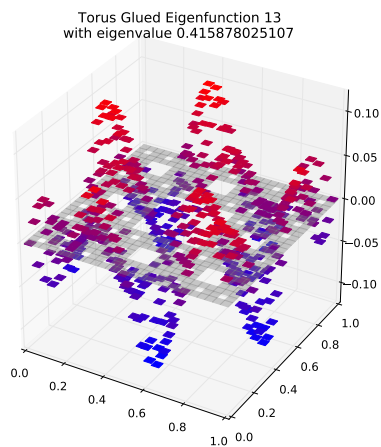
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.156108419131$   
Dot Value: 0.002387616958102967

## 15 $M = 4$ Eigenfunction 14

$M = 4$  Eigenfunction 14 has eigenvalue 0.0649220610509



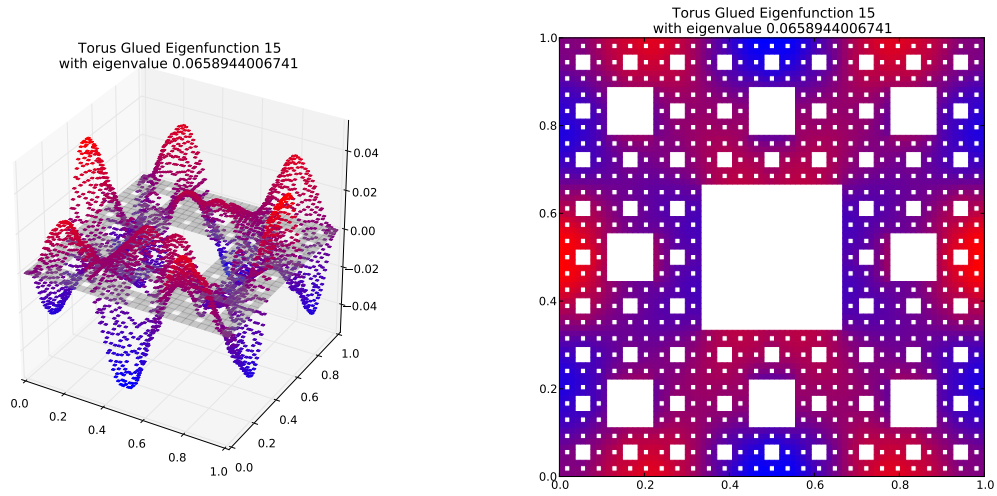
Compare to  $m = 3$  eigenspace with eigenvalue 0.415878025107  
(Note: Eigenspace Dimension  $> 1$ )



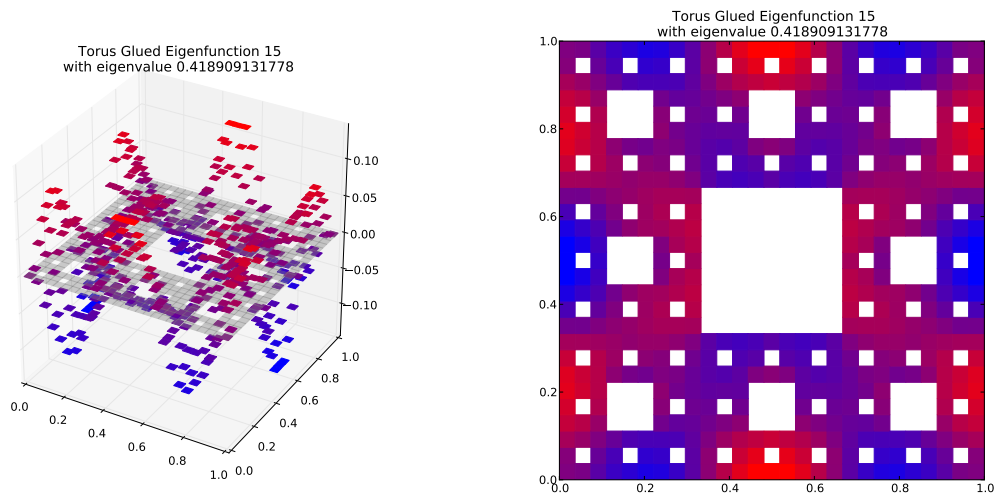
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.156108419131$   
Dot Value: 0.0023876169581036333

## 16 $M = 4$ Eigenfunction 15

$M = 4$  Eigenfunction 15 has eigenvalue 0.0658944006741



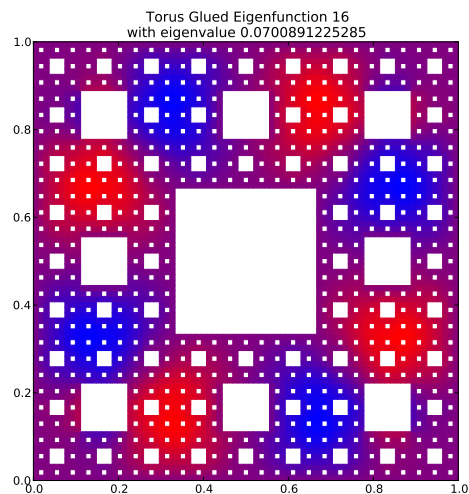
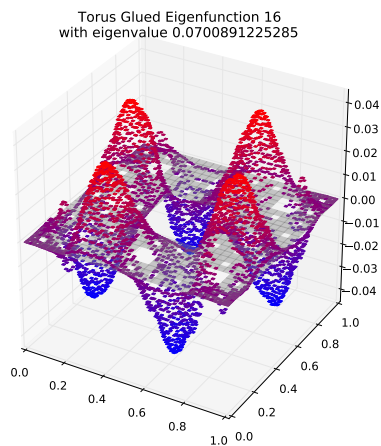
Compare to  $m = 3$  eigenspace with eigenvalue 0.418909131778



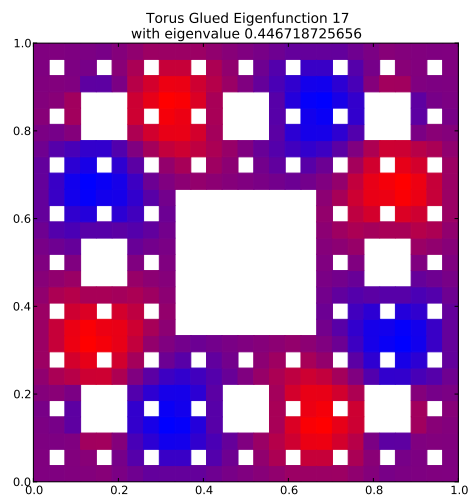
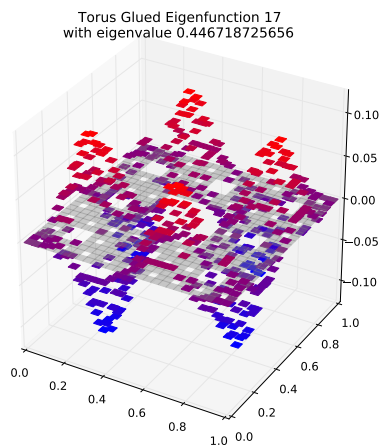
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.157299986263$   
Dot Value: 0.0003833433743922754

## 17 $M = 4$ Eigenfunction 16

$M = 4$  Eigenfunction 16 has eigenvalue 0.0700891225285



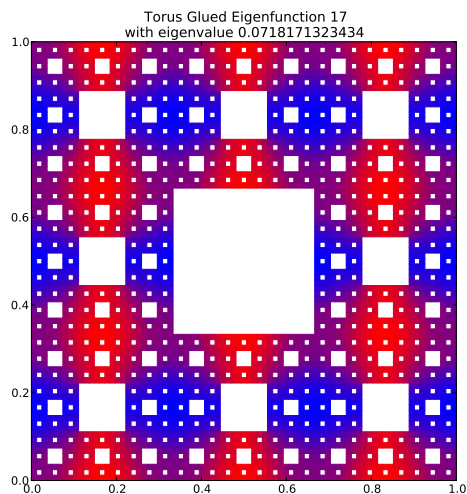
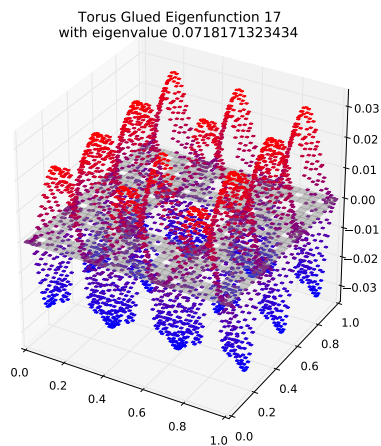
Compare to  $m = 3$  eigenspace with eigenvalue 0.446718725656



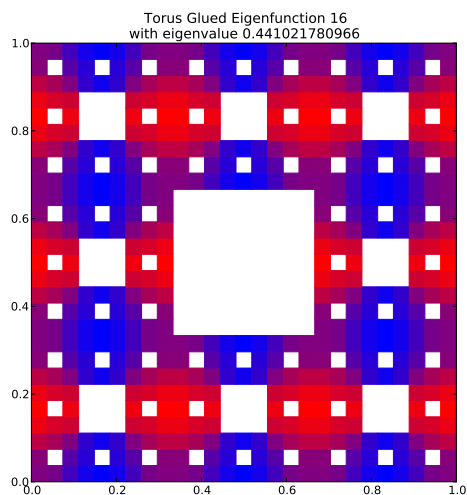
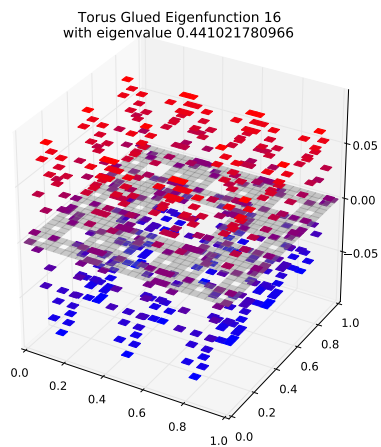
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.156897659541$   
Dot Value: 0.00026798531625094046

## 18 $M = 4$ Eigenfunction 17

$M = 4$  Eigenfunction 17 has eigenvalue 0.0718171323434



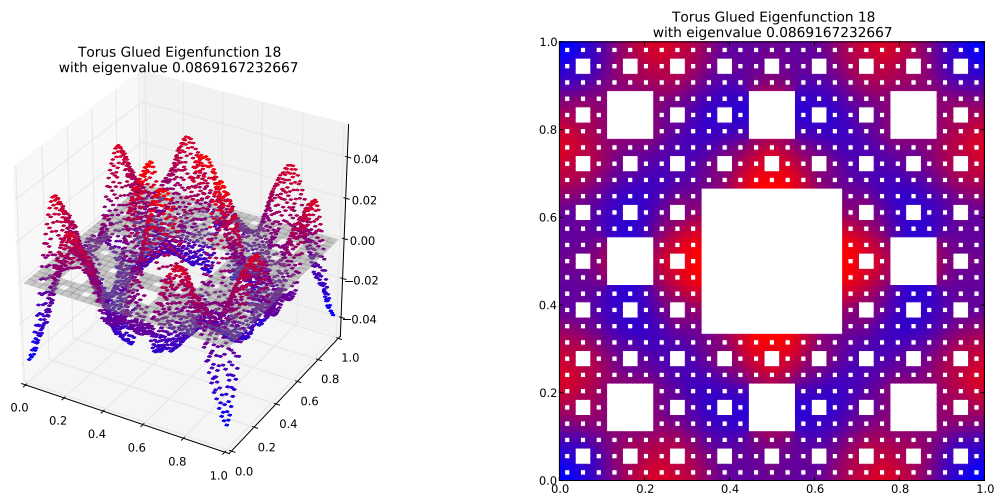
Compare to  $m = 3$  eigenspace with eigenvalue 0.441021780966



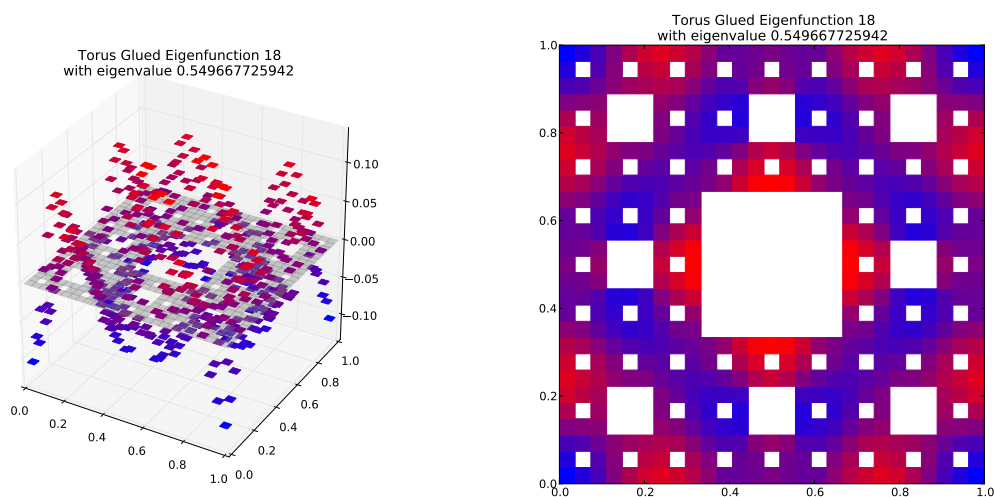
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.162842597447$   
Dot Value: 0.0003112650688600338

## 19 $M = 4$ Eigenfunction 18

$M = 4$  Eigenfunction 18 has eigenvalue 0.0869167232667



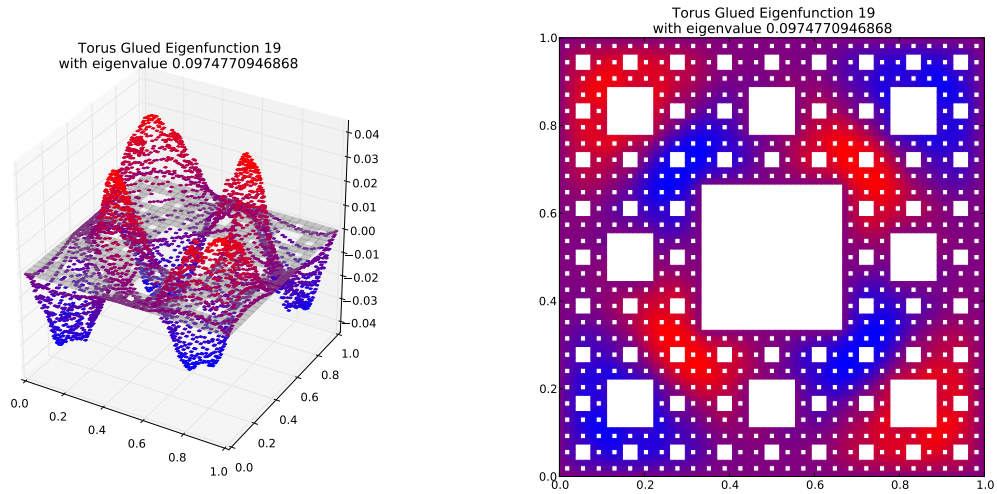
Compare to  $m = 3$  eigenspace with eigenvalue 0.549667725942



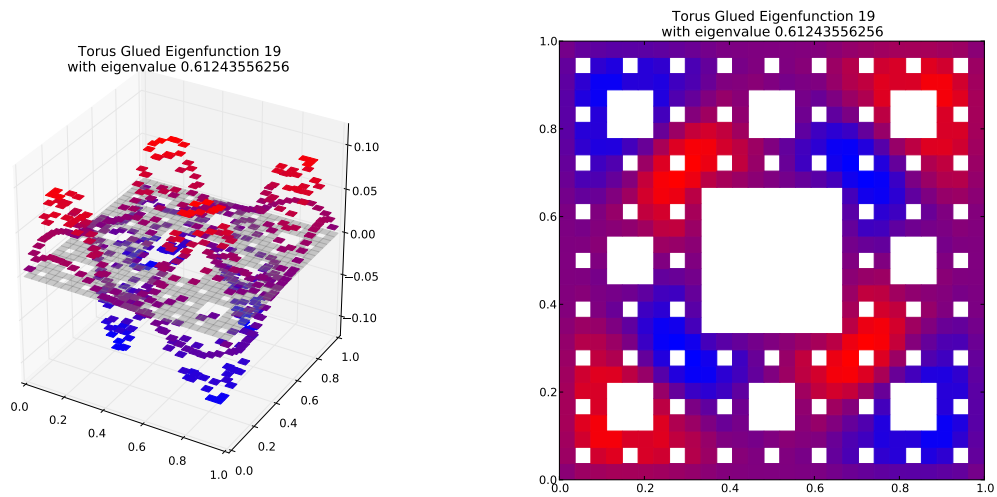
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.158125935296$   
Dot Value: 0.003186414597792786

## 20 $M = 4$ Eigenfunction 19

$M = 4$  Eigenfunction 19 has eigenvalue 0.0974770946868



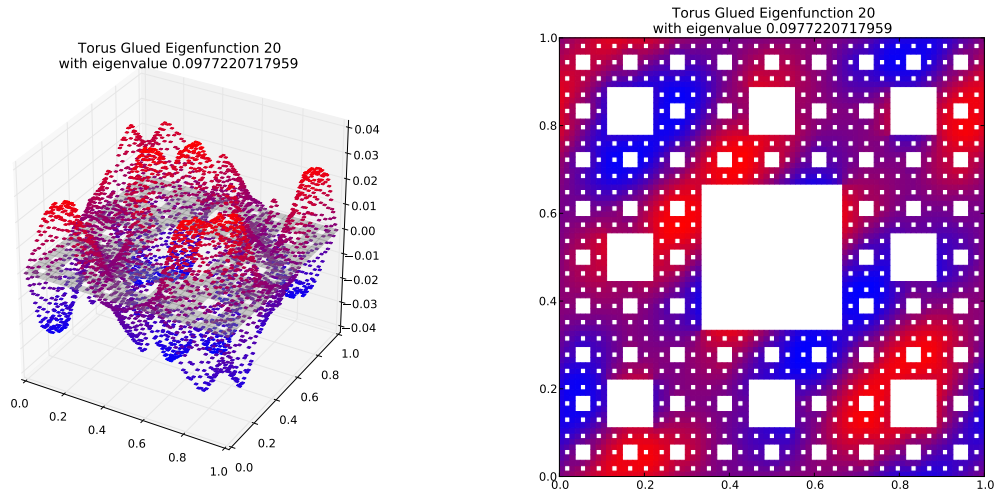
Compare to  $m = 3$  eigenspace with eigenvalue 0.61243556256



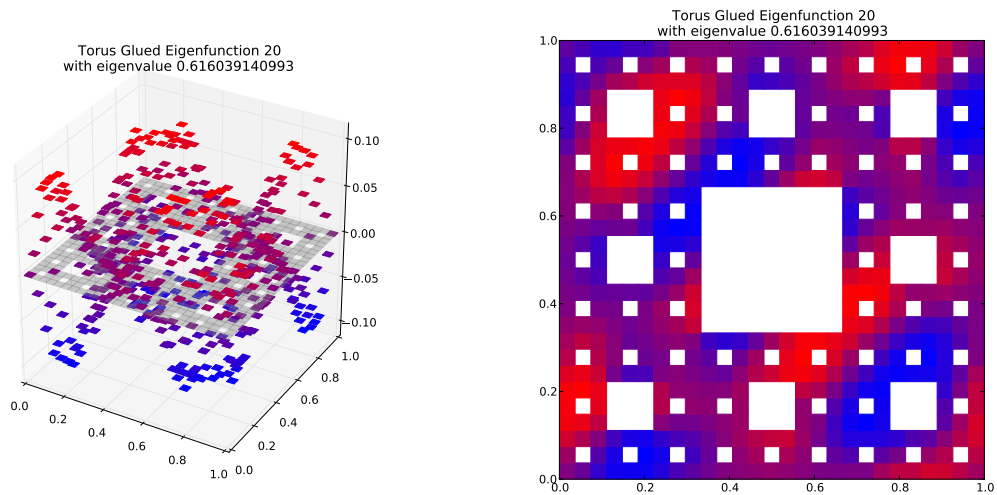
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.159163021624$   
Dot Value: 0.0011745562830310918

## 21 $M = 4$ Eigenfunction 20

$M = 4$  Eigenfunction 20 has eigenvalue 0.0977220717959



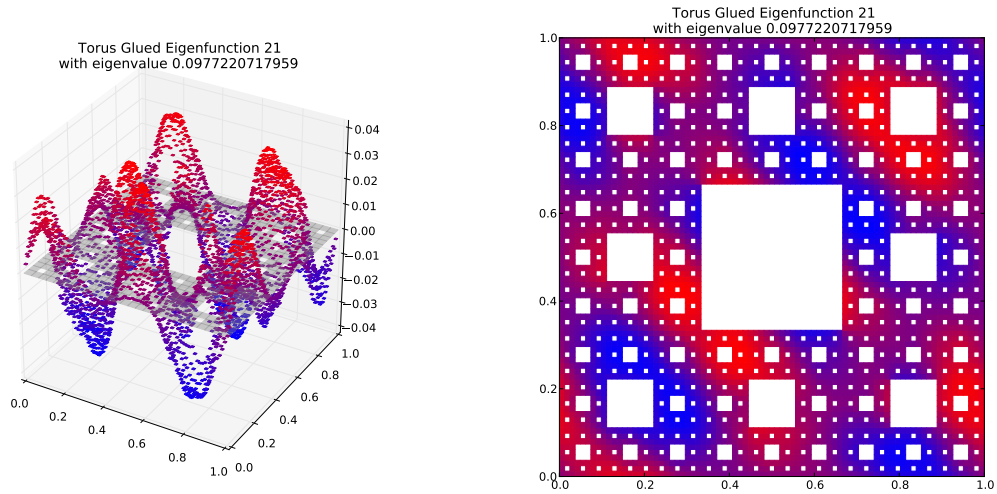
Compare to  $m = 3$  eigenspace with eigenvalue 0.616039140993  
(Note: Eigenspace Dimension  $> 1$ )



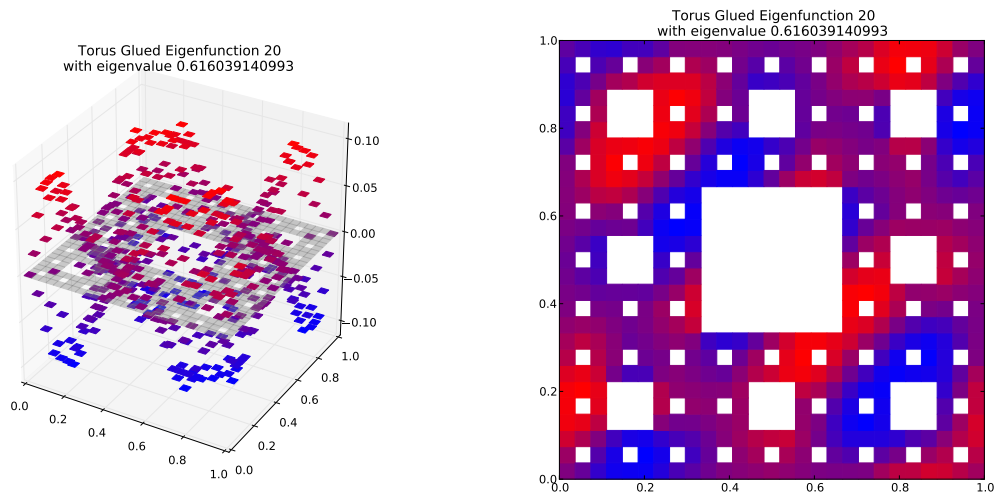
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.158629647523$   
Dot Value: 0.0048816469107738625

## 22 $M = 4$ Eigenfunction 21

$M = 4$  Eigenfunction 21 has eigenvalue 0.0977220717959



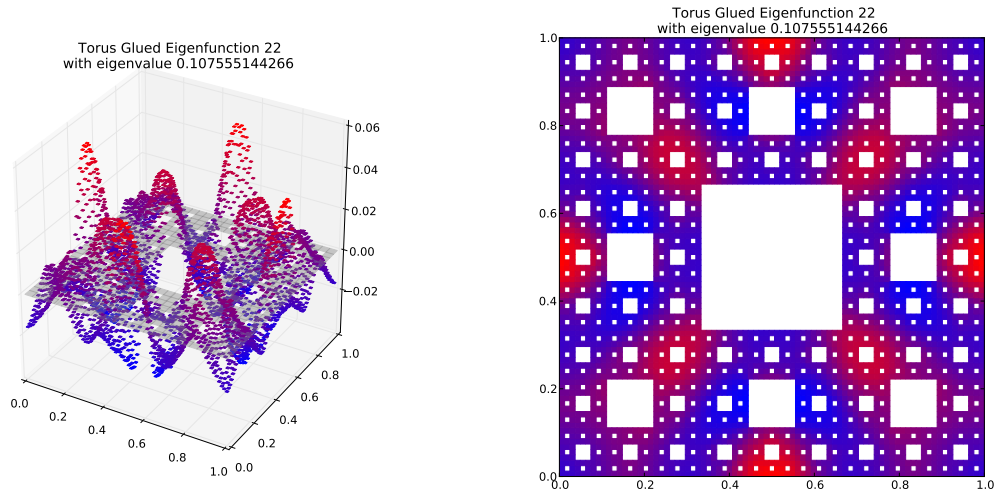
Compare to  $m = 3$  eigenspace with eigenvalue 0.616039140993  
(Note: Eigenspace Dimension  $> 1$ )



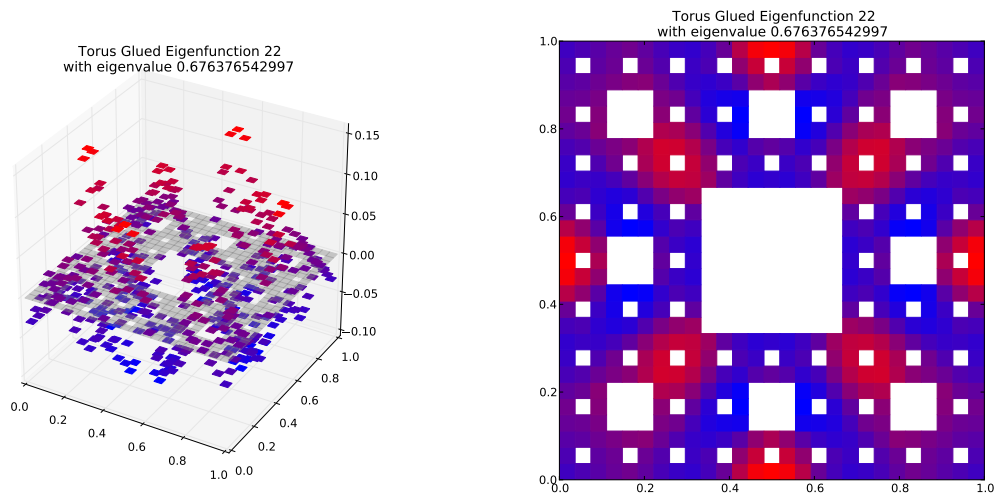
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.158629647523$   
Dot Value: 0.0048816469107737515

## 23 $M = 4$ Eigenfunction 22

$M = 4$  Eigenfunction 22 has eigenvalue 0.107555144266



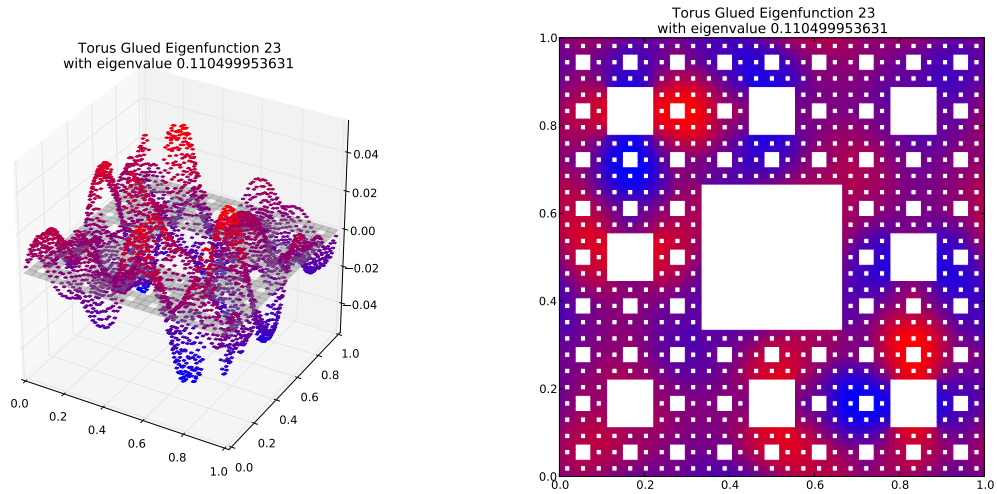
Compare to  $m = 3$  eigenspace with eigenvalue 0.676376542997



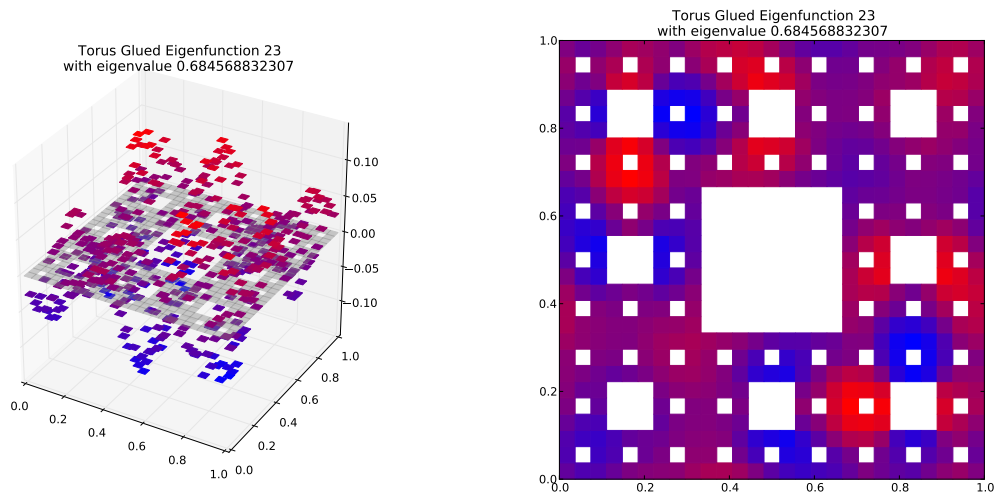
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.159016668126$   
Dot Value: 0.00366215039378337

## 24 $M = 4$ Eigenfunction 23

$M = 4$  Eigenfunction 23 has eigenvalue 0.110499953631



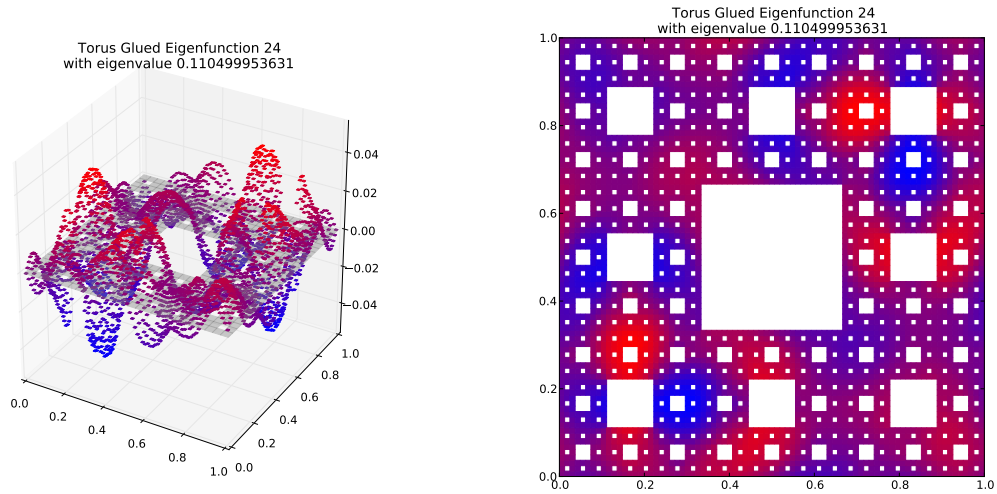
Compare to  $m = 3$  eigenspace with eigenvalue 0.684568832307  
(Note: Eigenspace Dimension  $> 1$ )



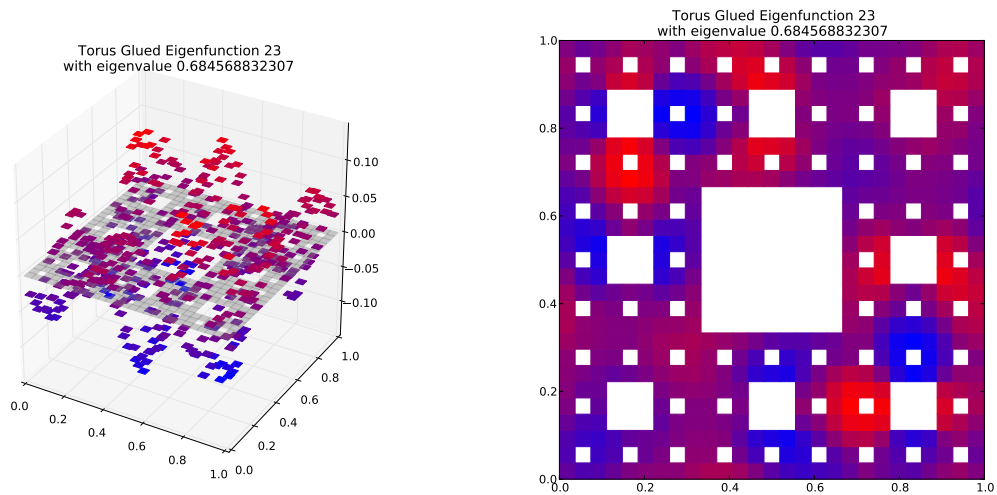
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.161415402537$   
Dot Value: 0.005646064145649388

## 25 $M = 4$ Eigenfunction 24

$M = 4$  Eigenfunction 24 has eigenvalue 0.110499953631



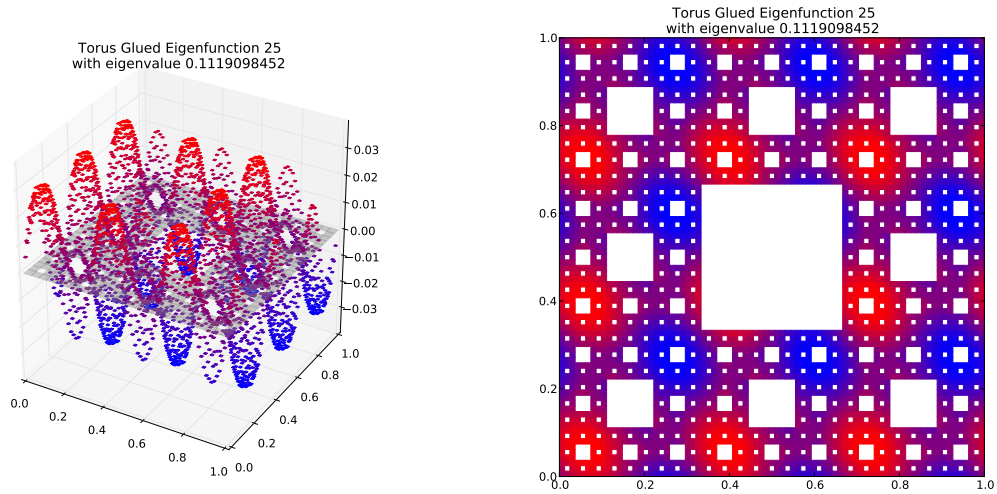
Compare to  $m = 3$  eigenspace with eigenvalue 0.684568832307  
(Note: Eigenspace Dimension  $> 1$ )



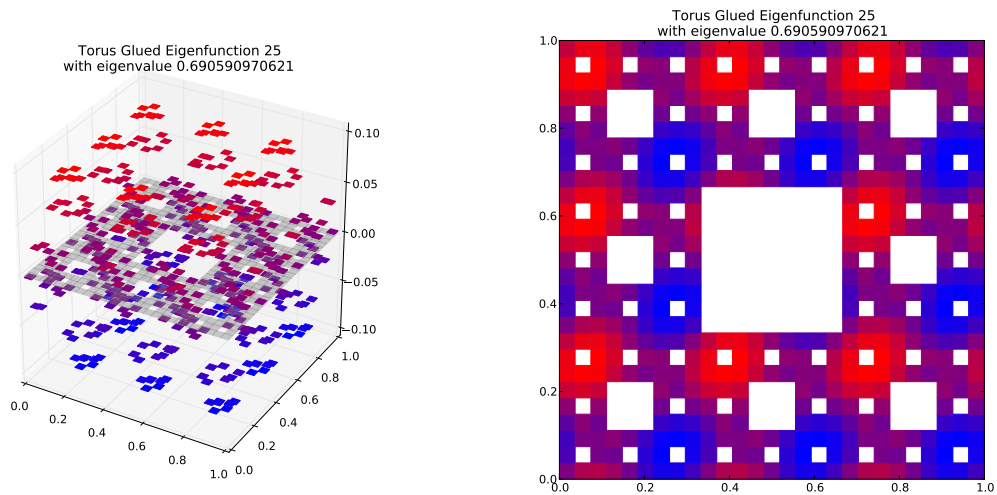
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.161415402537$   
Dot Value: 0.005646064145649277

## 26 $M = 4$ Eigenfunction 25

$M = 4$  Eigenfunction 25 has eigenvalue 0.1119098452



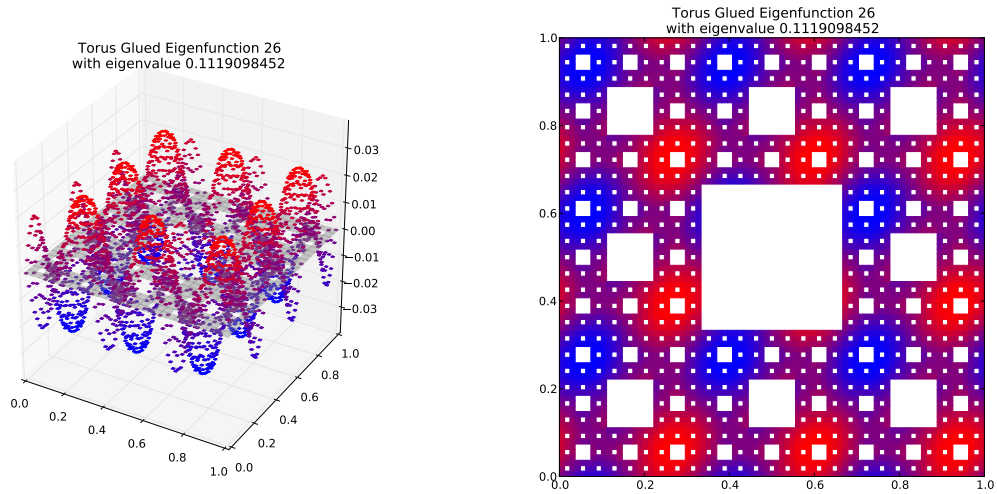
Compare to  $m = 3$  eigenspace with eigenvalue 0.690590970621  
(Note: Eigenspace Dimension  $> 1$ )



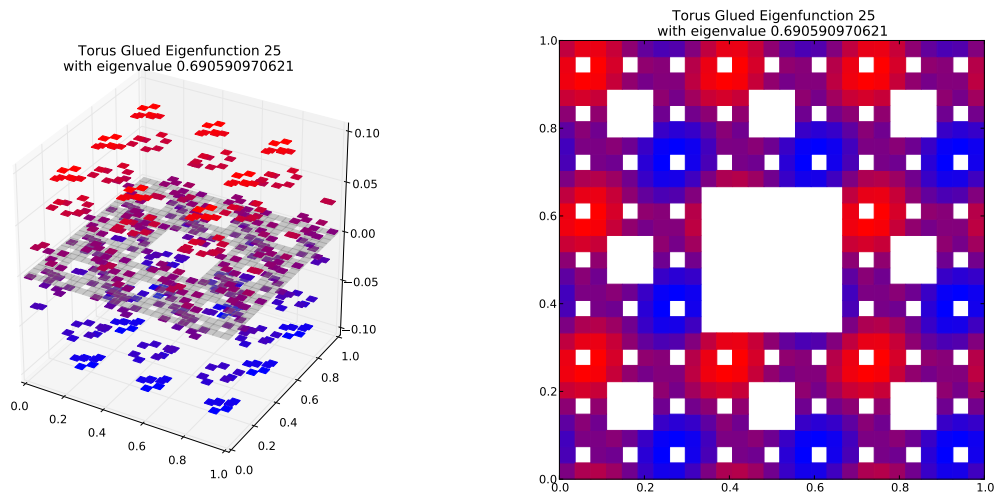
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.162049389524$   
Dot Value: 0.0008691073914721681

## 27 $M = 4$ Eigenfunction 26

$M = 4$  Eigenfunction 26 has eigenvalue 0.1119098452



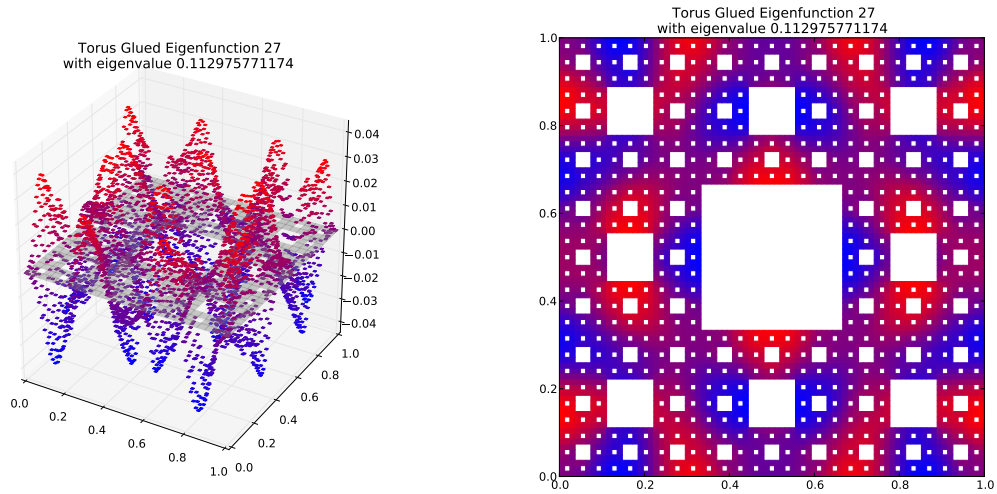
Compare to  $m = 3$  eigenspace with eigenvalue 0.690590970621  
(Note: Eigenspace Dimension  $> 1$ )



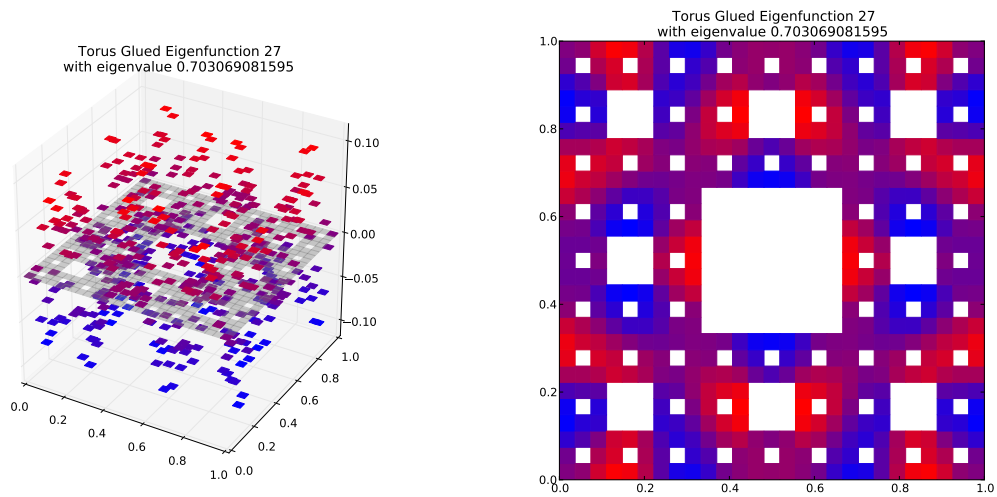
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.162049389524$   
Dot Value: 0.0008691073914721681

## 28 $M = 4$ Eigenfunction 27

$M = 4$  Eigenfunction 27 has eigenvalue 0.112975771174



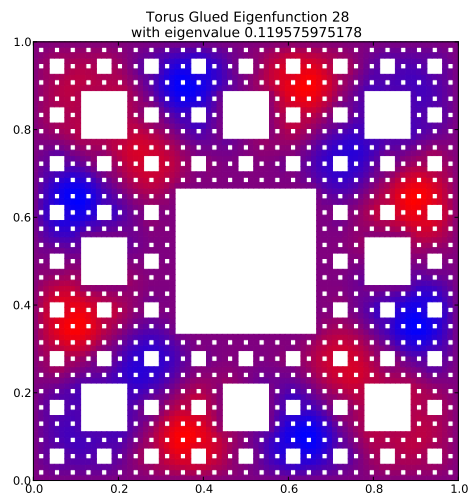
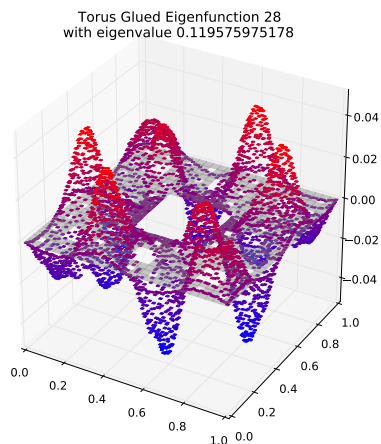
Compare to  $m = 3$  eigenspace with eigenvalue 0.703069081595



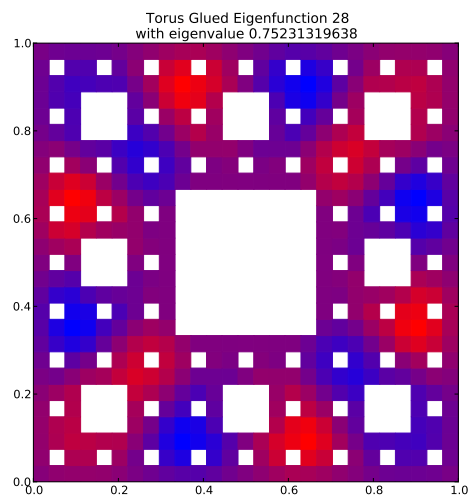
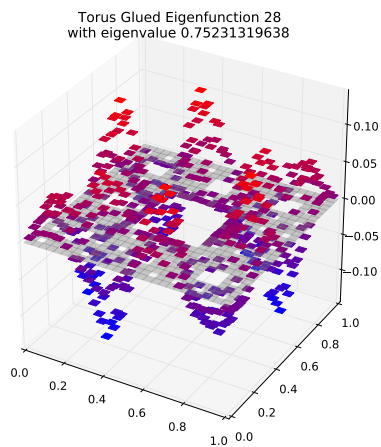
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.160689431709$   
Dot Value: 0.002994545992954345

## 29 $M = 4$ Eigenfunction 28

$M = 4$  Eigenfunction 28 has eigenvalue 0.119575975178



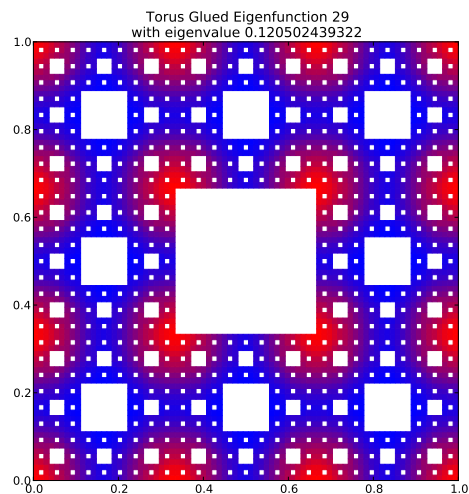
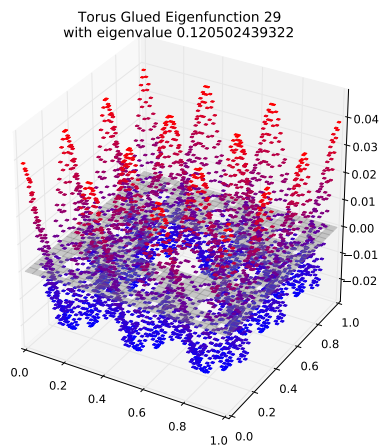
Compare to  $m = 3$  eigenspace with eigenvalue 0.75231319638



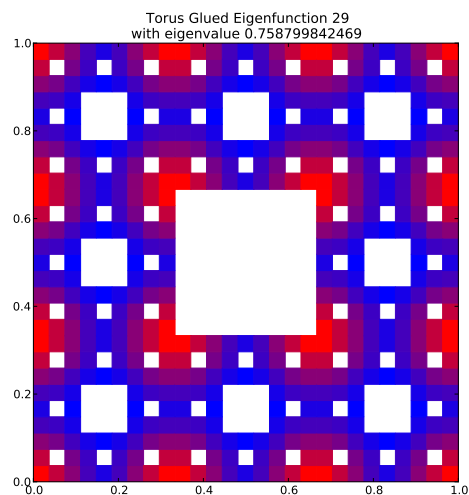
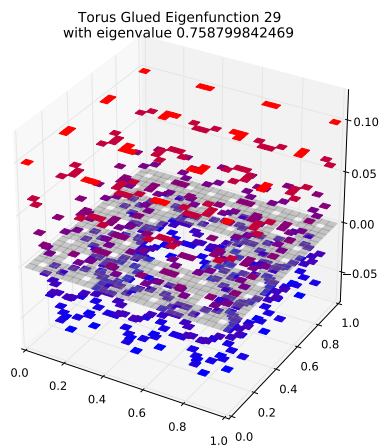
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.158944407401$   
Dot Value: 0.0013612312038473462

### 30 $M = 4$ Eigenfunction 29

$M = 4$  Eigenfunction 29 has eigenvalue 0.120502439322



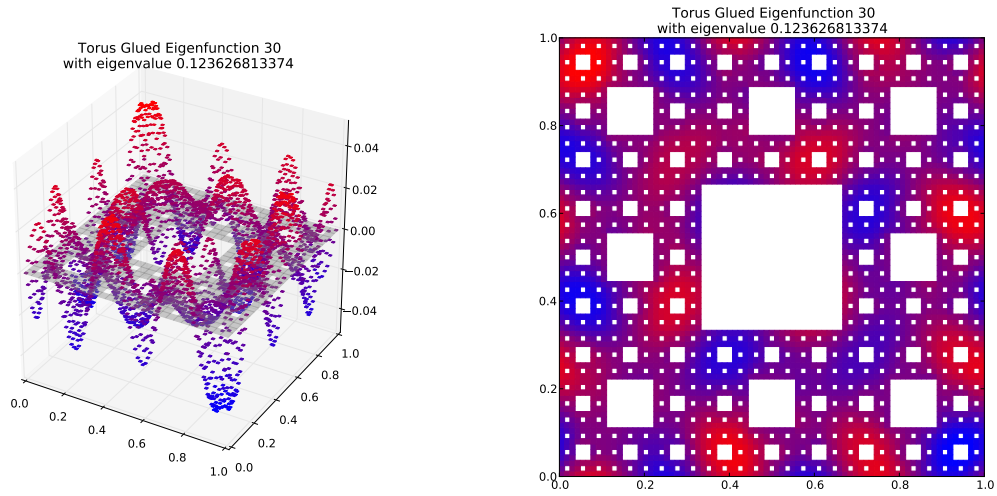
Compare to  $m = 3$  eigenspace with eigenvalue 0.758799842469



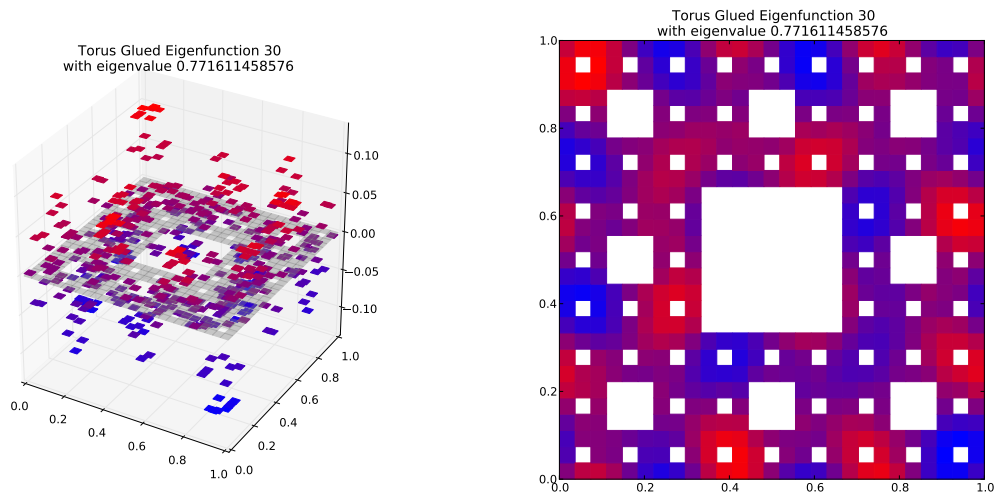
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.158806621427$   
Dot Value: 0.0006181836074254932

### 31 $M = 4$ Eigenfunction 30

$M = 4$  Eigenfunction 30 has eigenvalue 0.123626813374



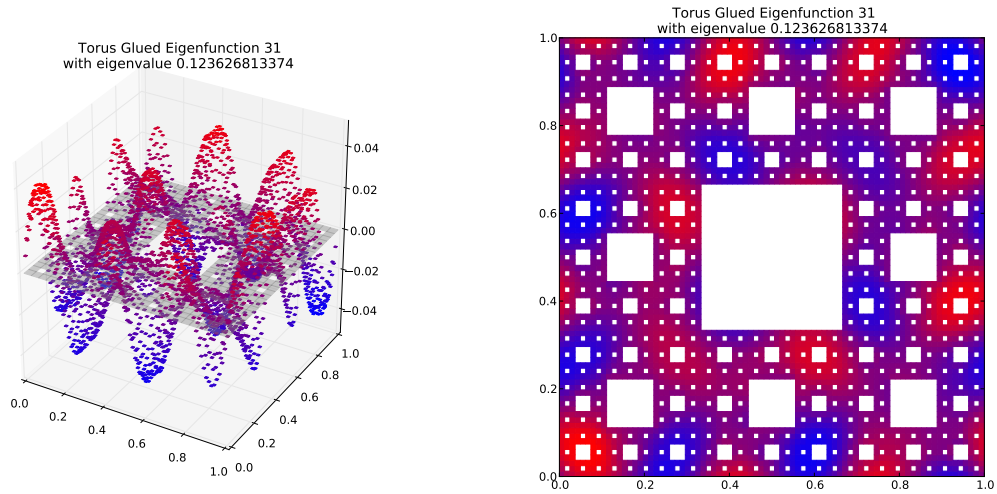
Compare to  $m = 3$  eigenspace with eigenvalue 0.771611458576  
(Note: Eigenspace Dimension  $> 1$ )



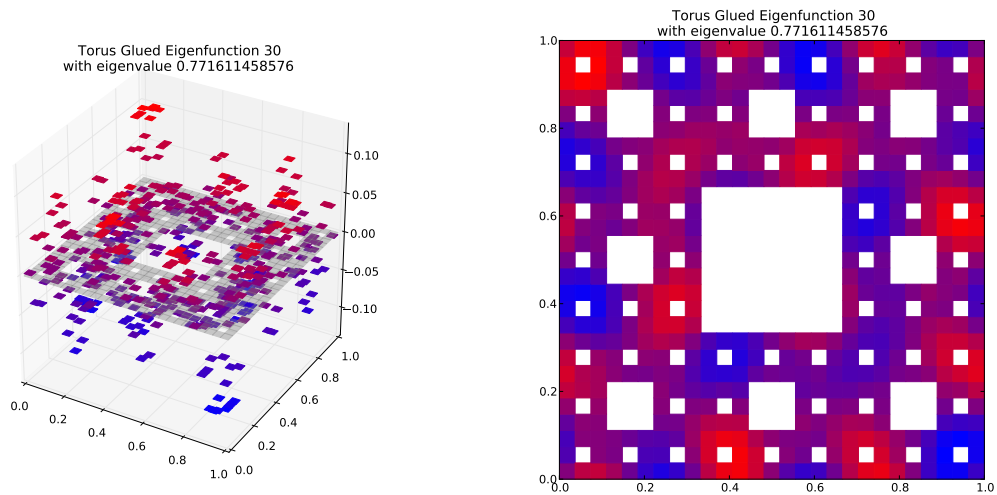
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.160218996231$   
Dot Value: 0.0012513741623556562

## 32 $M = 4$ Eigenfunction 31

$M = 4$  Eigenfunction 31 has eigenvalue 0.123626813374



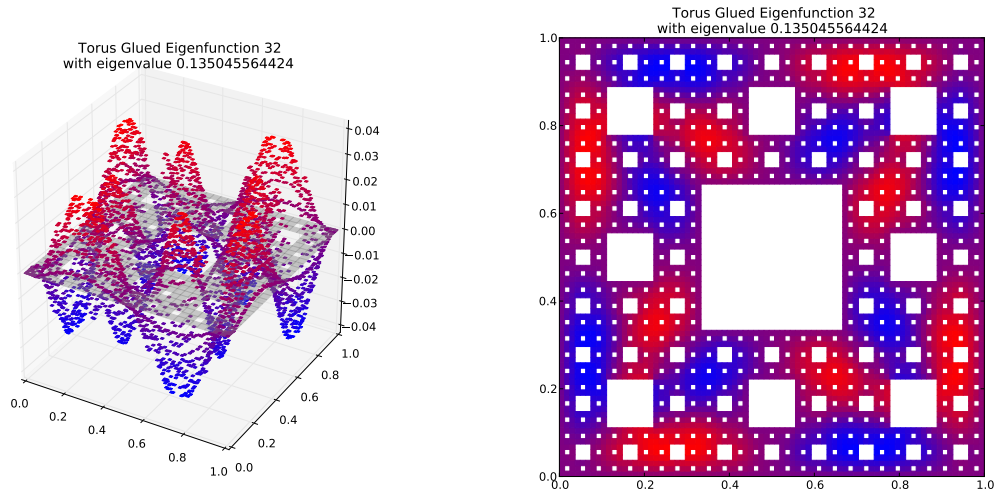
Compare to  $m = 3$  eigenspace with eigenvalue 0.771611458576  
(Note: Eigenspace Dimension  $> 1$ )



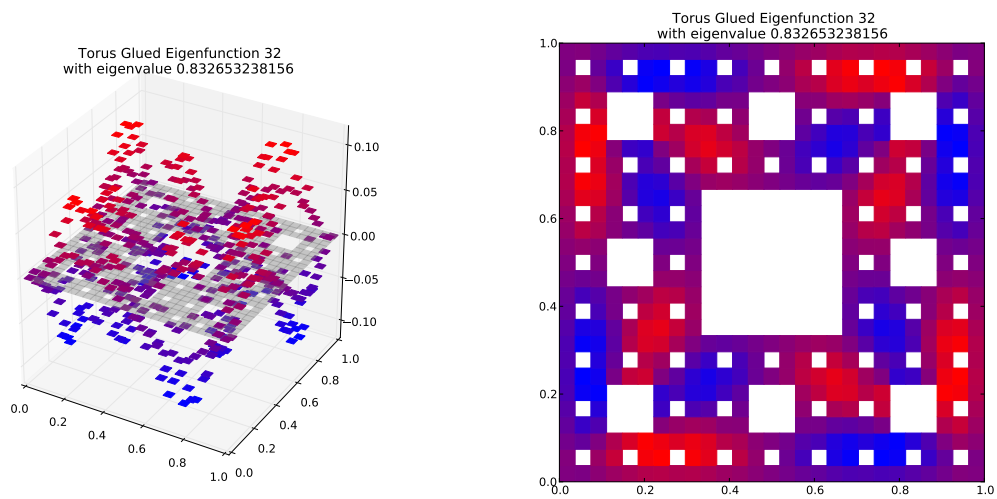
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.160218996231$   
Dot Value: 0.0012513741623554342

### 33 $M = 4$ Eigenfunction 32

$M = 4$  Eigenfunction 32 has eigenvalue 0.135045564424



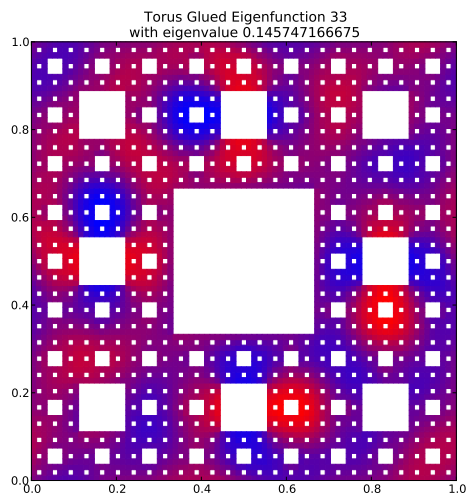
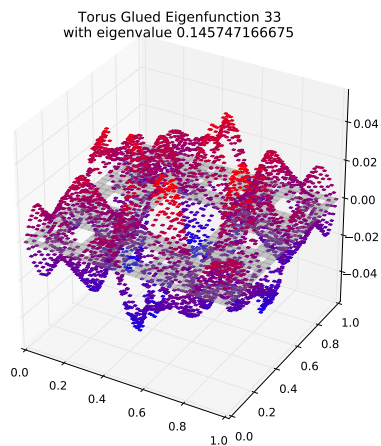
Compare to  $m = 3$  eigenspace with eigenvalue 0.832653238156



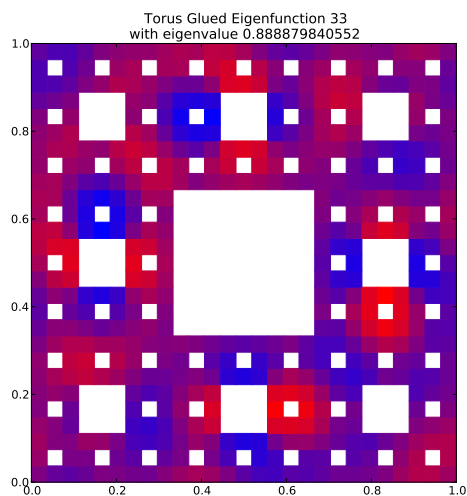
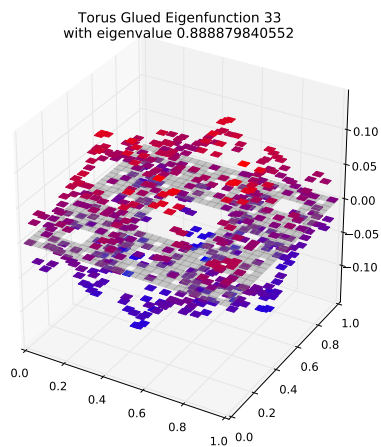
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.162187040458$   
Dot Value: 0.00409369338530452

### 34 $M = 4$ Eigenfunction 33

$M = 4$  Eigenfunction 33 has eigenvalue 0.145747166675



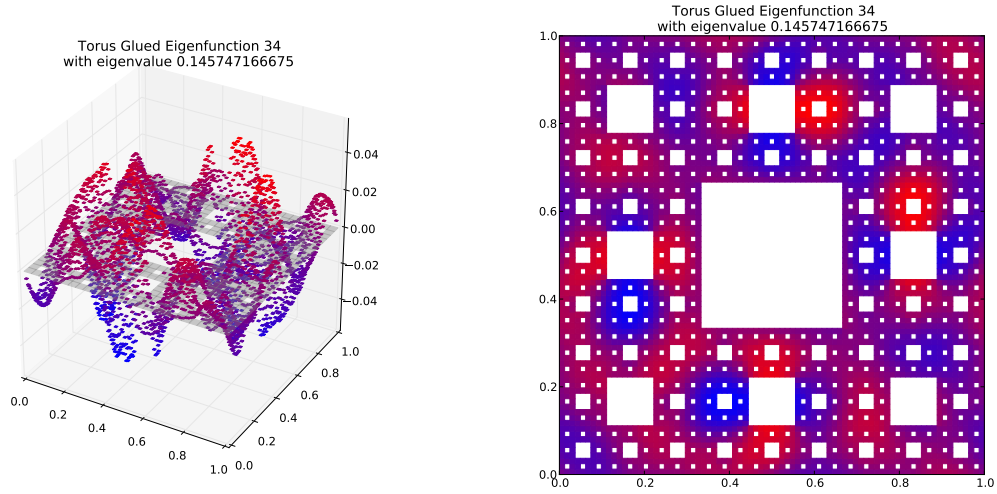
Compare to  $m = 3$  eigenspace with eigenvalue 0.888879840552  
(Note: Eigenspace Dimension  $> 1$ )



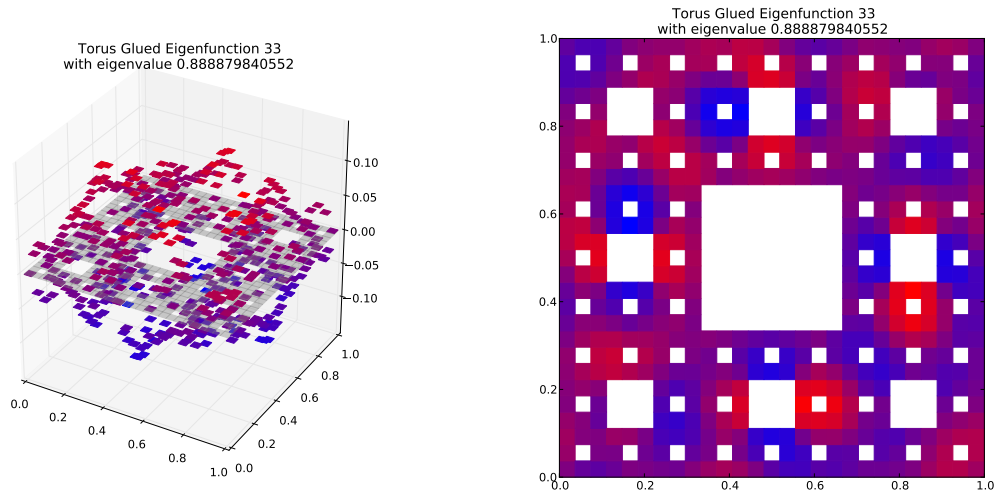
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163967231594$   
Dot Value: 0.006895285161084175

### 35 $M = 4$ Eigenfunction 34

$M = 4$  Eigenfunction 34 has eigenvalue 0.145747166675



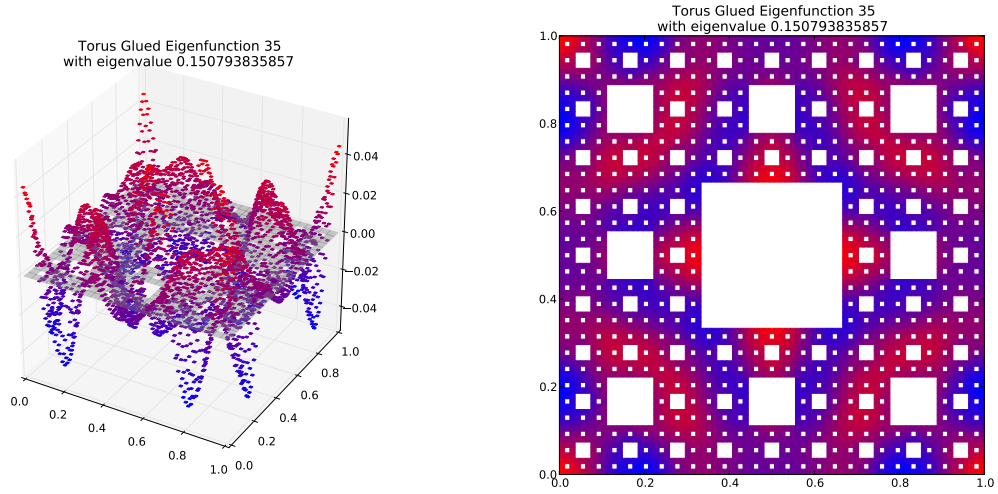
Compare to  $m = 3$  eigenspace with eigenvalue 0.888879840552  
(Note: Eigenspace Dimension  $> 1$ )



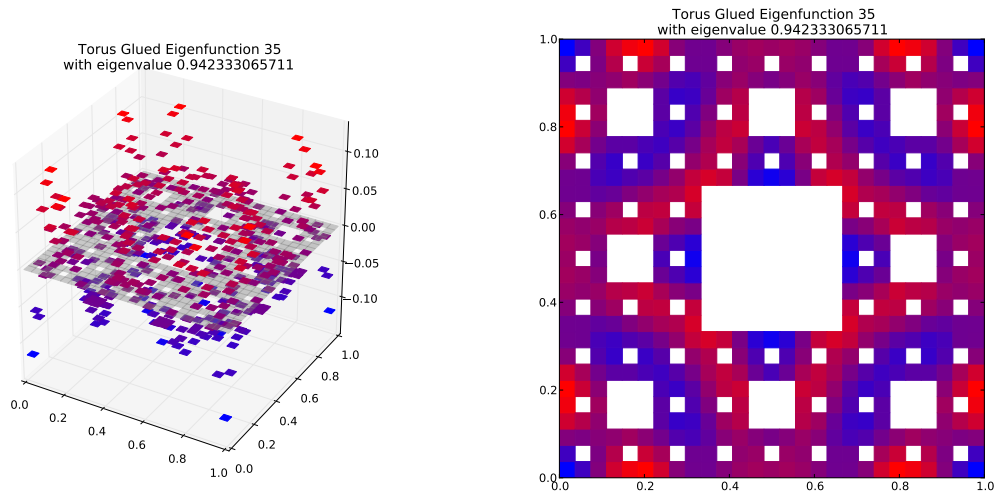
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163967231594$   
Dot Value: 0.006895285161088394

### 36 $M = 4$ Eigenfunction 35

$M = 4$  Eigenfunction 35 has eigenvalue 0.150793835857



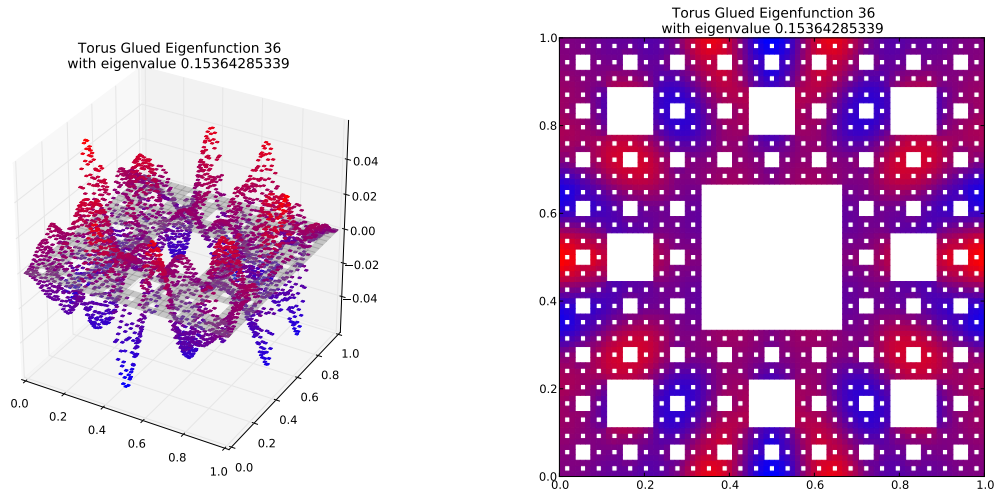
Compare to  $m = 3$  eigenspace with eigenvalue 0.942333065711



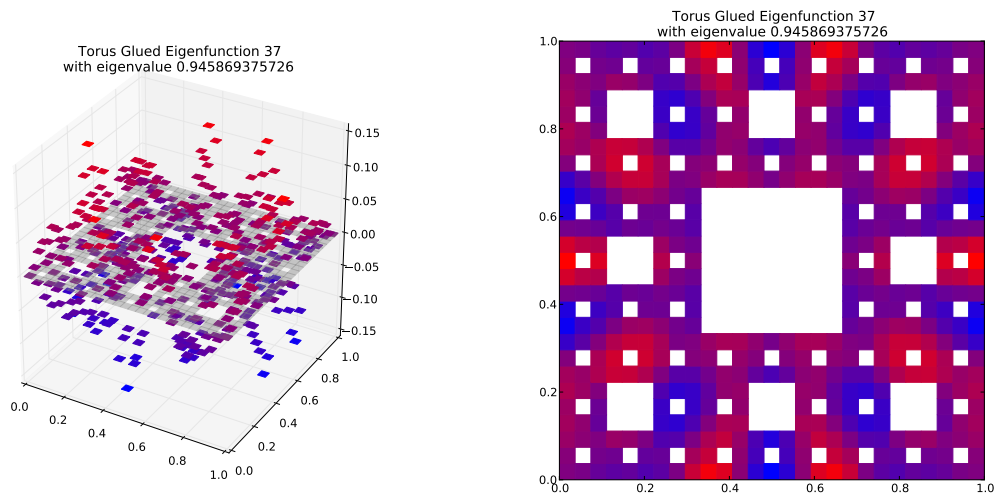
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.160021802634$   
Dot Value: 0.002098094671573403

### 37 $M = 4$ Eigenfunction 36

$M = 4$  Eigenfunction 36 has eigenvalue 0.15364285339



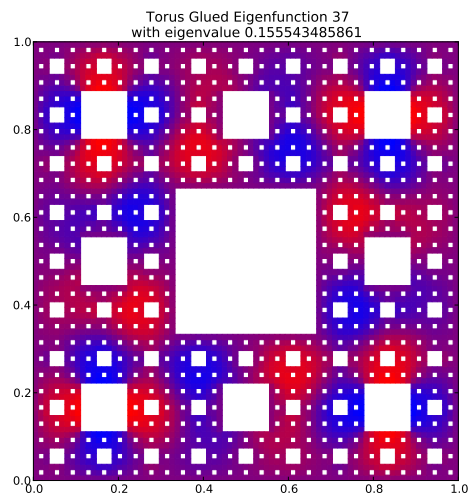
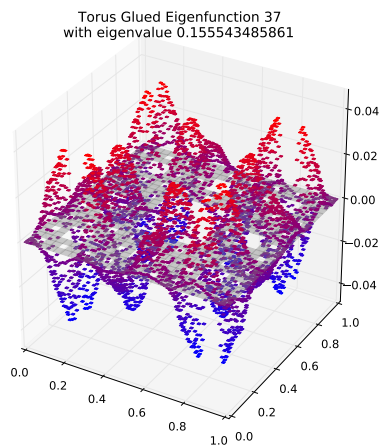
Compare to  $m = 3$  eigenspace with eigenvalue 0.945869375726



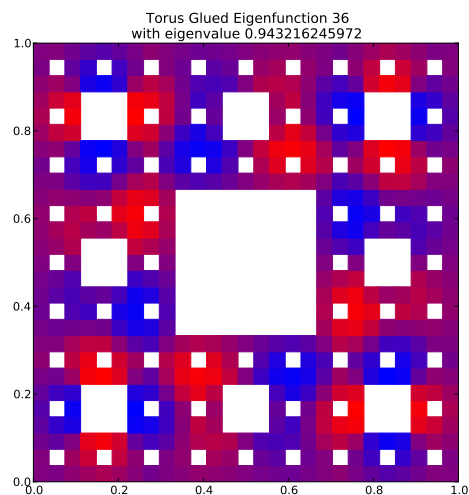
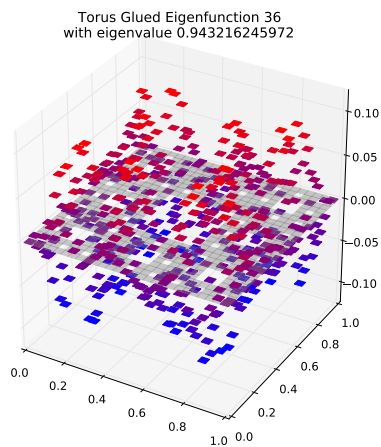
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.162435593469$   
Dot Value: 0.007810743552552846

### 38 $M = 4$ Eigenfunction 37

$M = 4$  Eigenfunction 37 has eigenvalue 0.155543485861



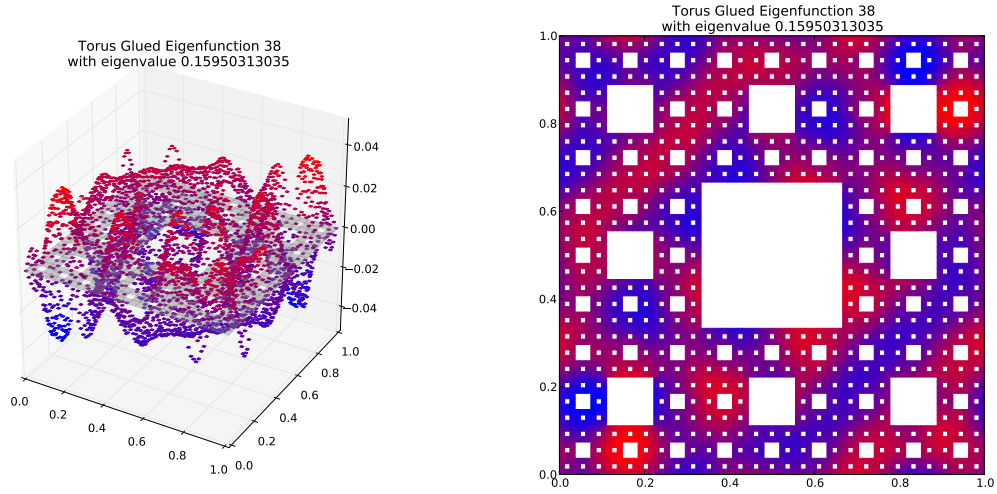
Compare to  $m = 3$  eigenspace with eigenvalue 0.943216245972



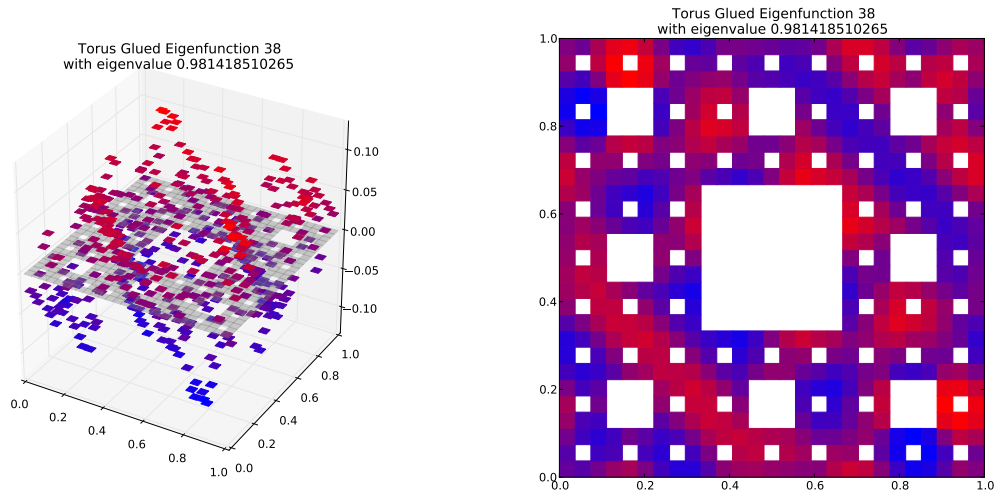
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.164907555956$   
Dot Value: 0.0040041096418772515

### 39 $M = 4$ Eigenfunction 38

$M = 4$  Eigenfunction 38 has eigenvalue 0.15950313035



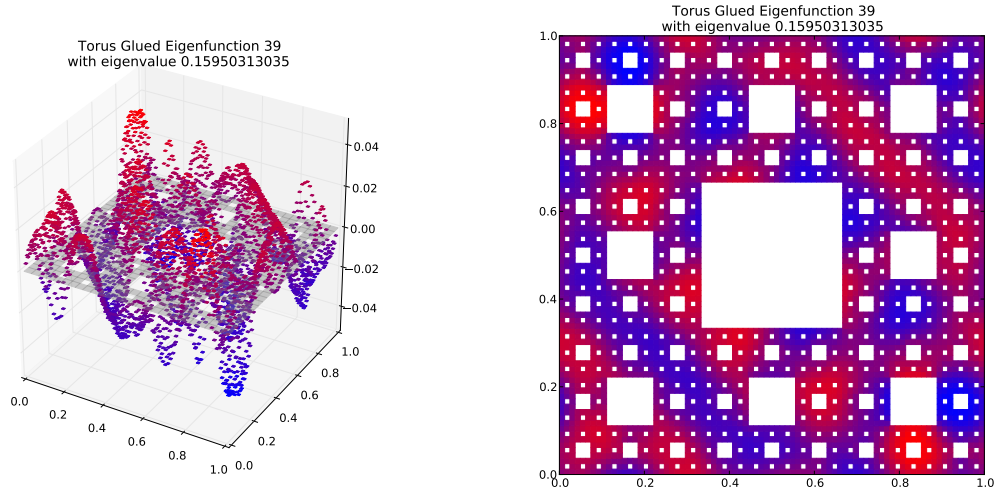
Compare to  $m = 3$  eigenspace with eigenvalue 0.981418510265  
(Note: Eigenspace Dimension  $> 1$ )



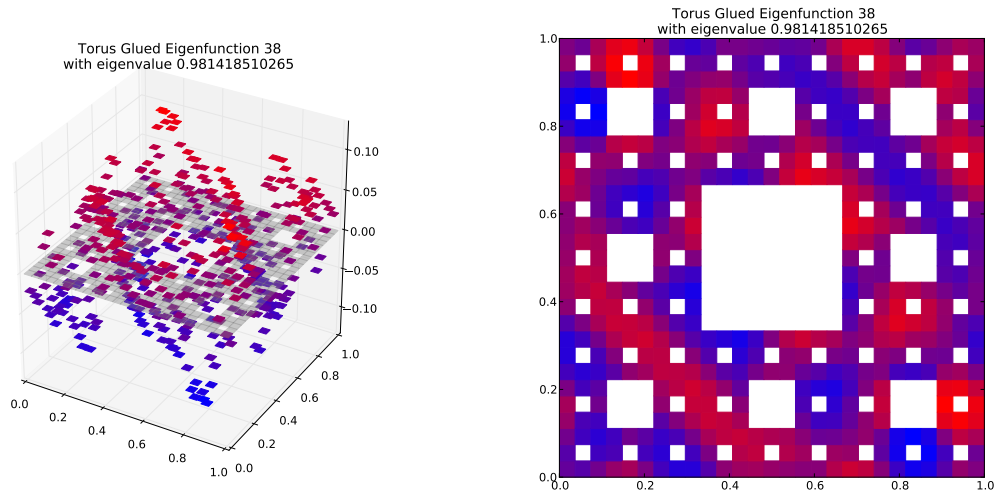
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.162523050749$   
Dot Value: 0.0078098372836177266

## 40 $M = 4$ Eigenfunction 39

$M = 4$  Eigenfunction 39 has eigenvalue 0.15950313035



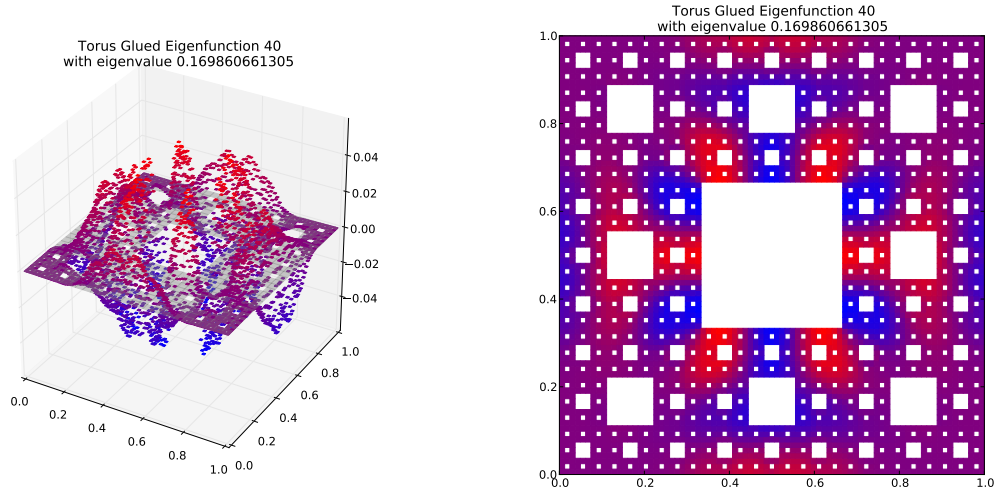
Compare to  $m = 3$  eigenspace with eigenvalue 0.981418510265  
(Note: Eigenspace Dimension  $> 1$ )



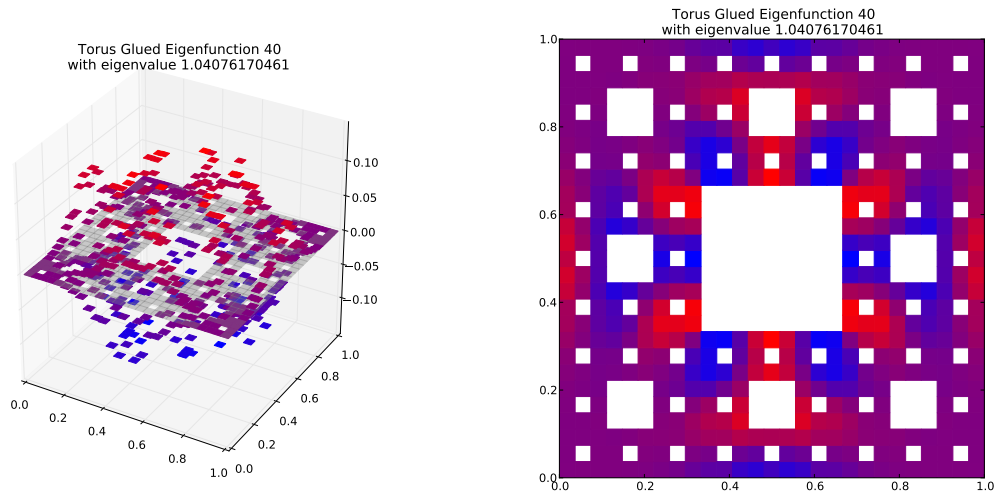
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.162523050749$   
Dot Value: 0.007809837283615506

# 41 $M = 4$ Eigenfunction 40

$M = 4$  Eigenfunction 40 has eigenvalue 0.169860661305



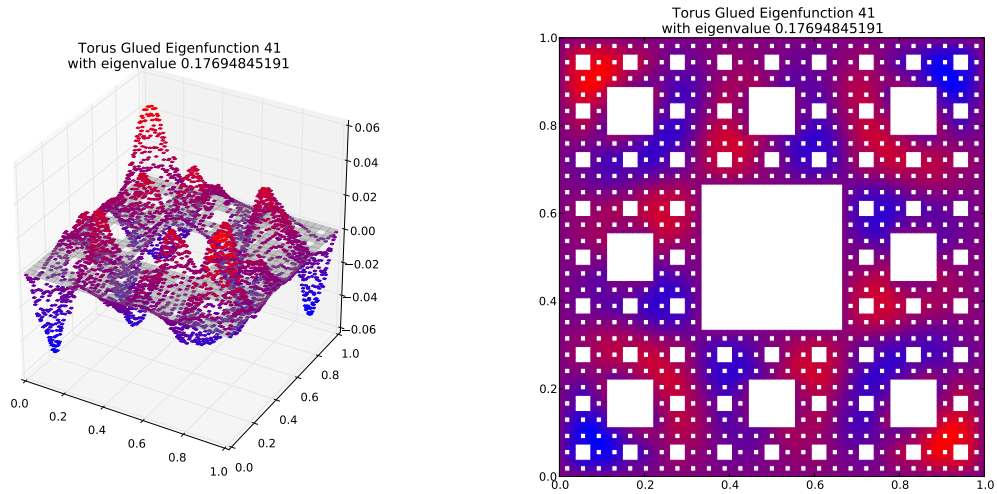
Compare to  $m = 3$  eigenspace with eigenvalue 1.04076170461



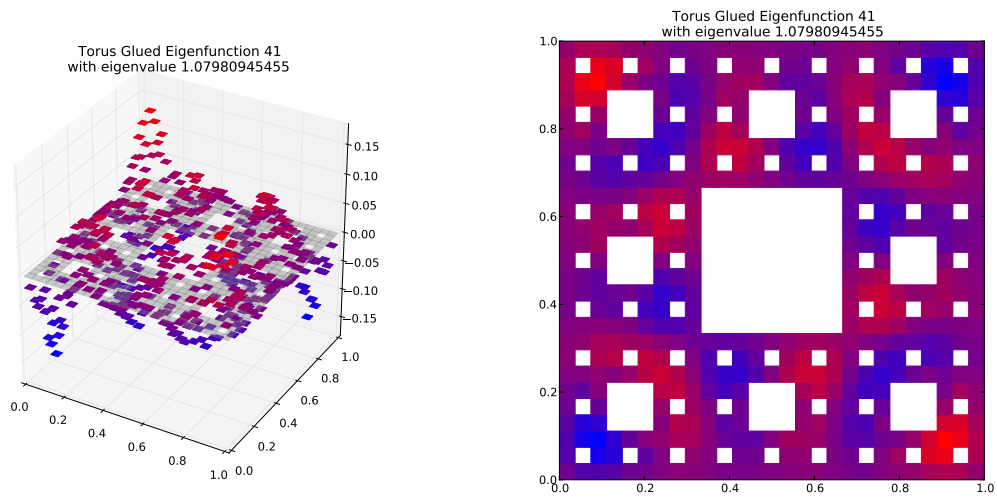
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163208024039$   
Dot Value: 0.005487726712087526

## 42 $M = 4$ Eigenfunction 41

$M = 4$  Eigenfunction 41 has eigenvalue 0.17694845191



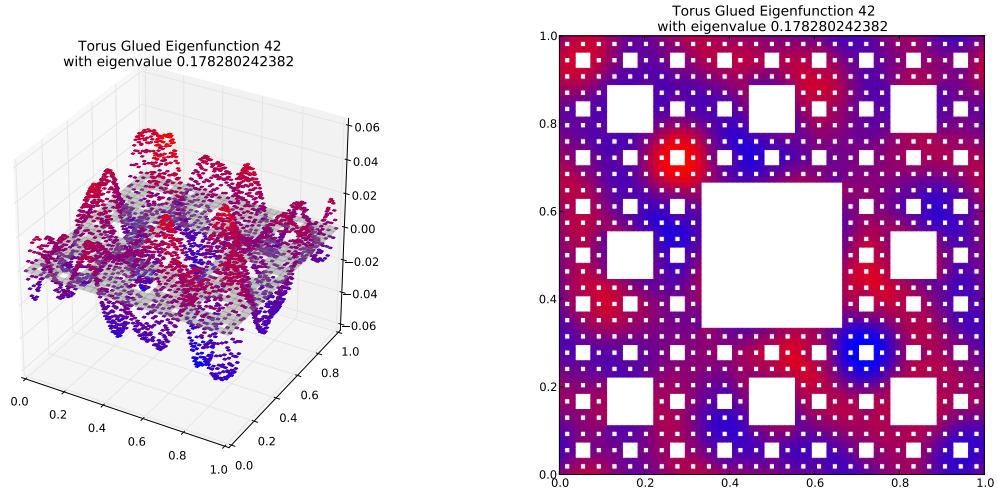
Compare to  $m = 3$  eigenspace with eigenvalue 1.07980945455



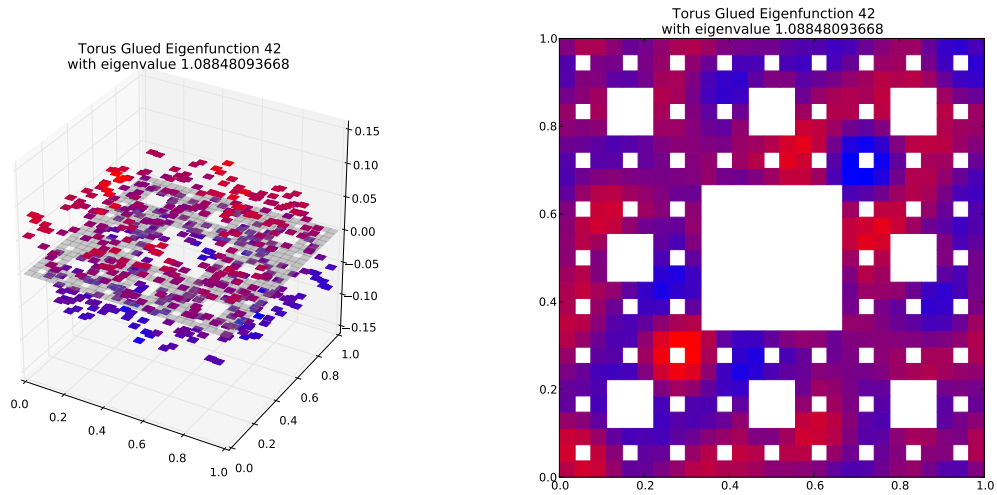
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163870070932$   
Dot Value: 0.0020830245257009716

### 43 $M = 4$ Eigenfunction 42

$M = 4$  Eigenfunction 42 has eigenvalue 0.178280242382



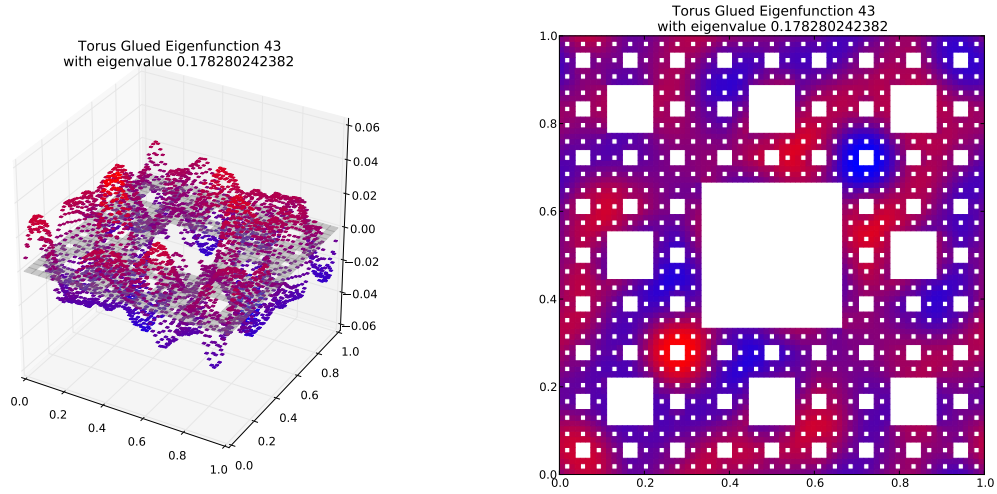
Compare to  $m = 3$  eigenspace with eigenvalue 1.08848093668  
(Note: Eigenspace Dimension  $> 1$ )



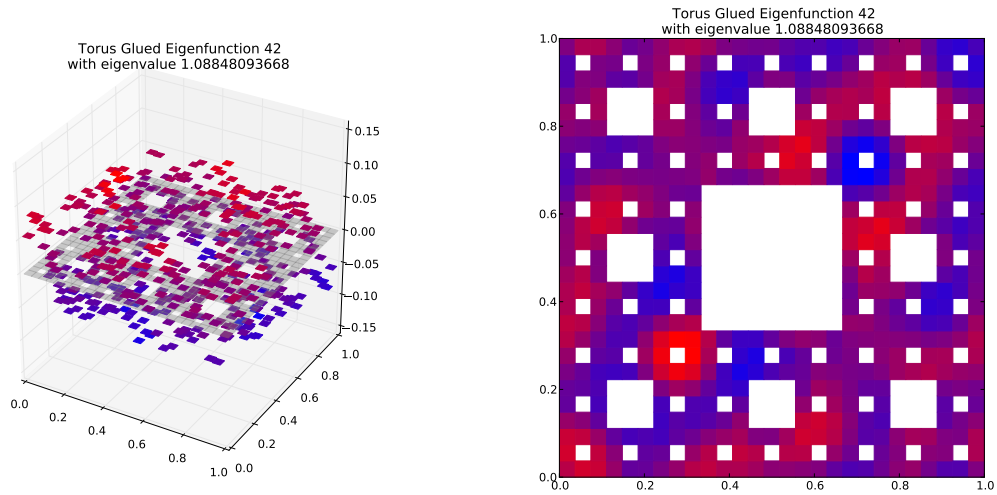
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163788116424$   
Dot Value: 0.0029603117375145427

## 44 $M = 4$ Eigenfunction 43

$M = 4$  Eigenfunction 43 has eigenvalue 0.178280242382



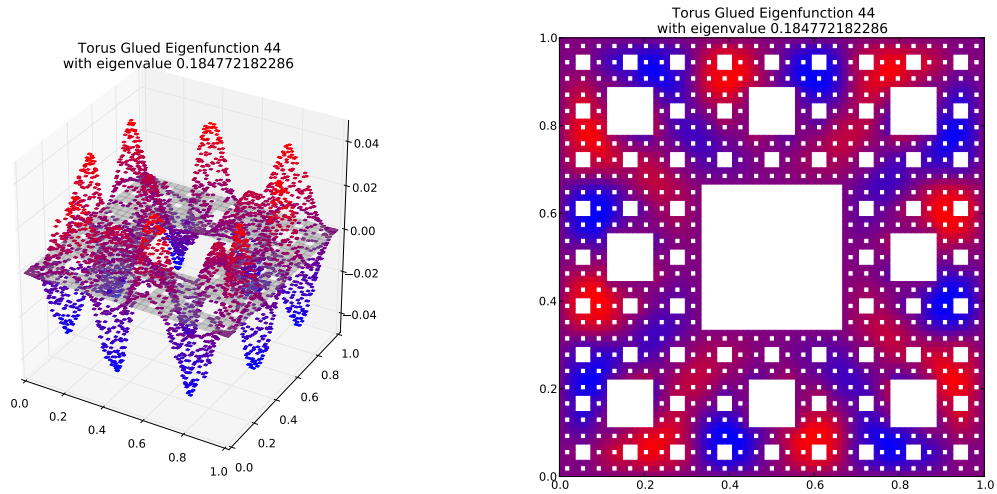
Compare to  $m = 3$  eigenspace with eigenvalue 1.08848093668  
(Note: Eigenspace Dimension  $> 1$ )



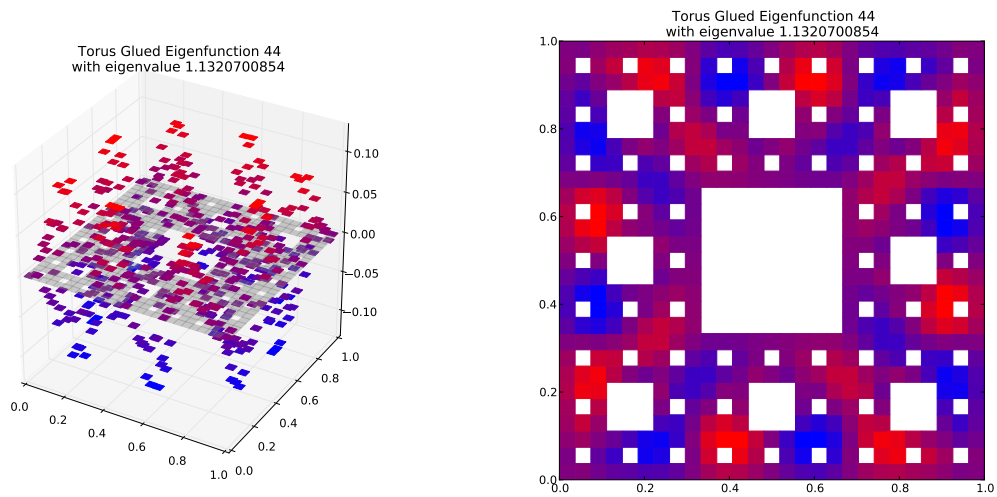
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163788116424$   
Dot Value: 0.002960311737515431

## 45 $M = 4$ Eigenfunction 44

$M = 4$  Eigenfunction 44 has eigenvalue 0.184772182286



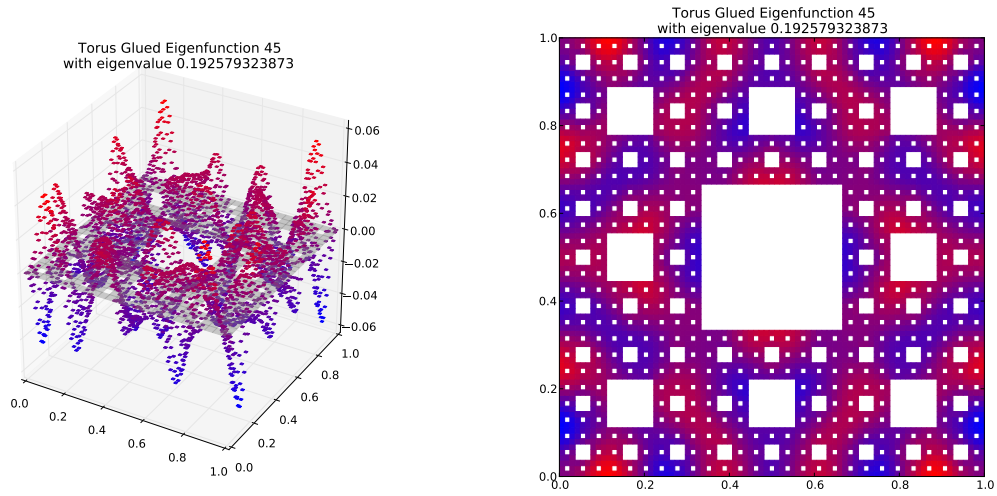
Compare to  $m = 3$  eigenspace with eigenvalue 1.1320700854



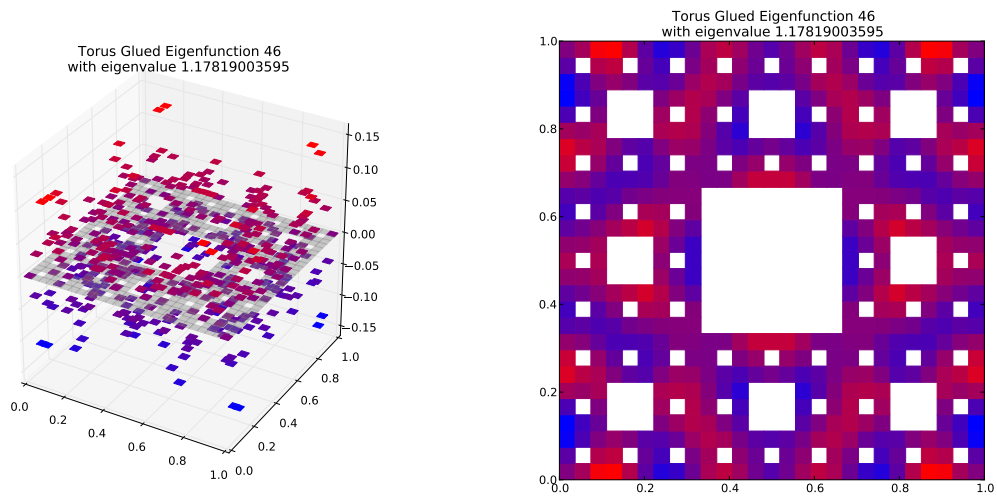
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163216204252$   
Dot Value: 0.0025642974624843218

## 46 $M = 4$ Eigenfunction 45

$M = 4$  Eigenfunction 45 has eigenvalue 0.192579323873



Compare to  $m = 3$  eigenspace with eigenvalue 1.17819003595

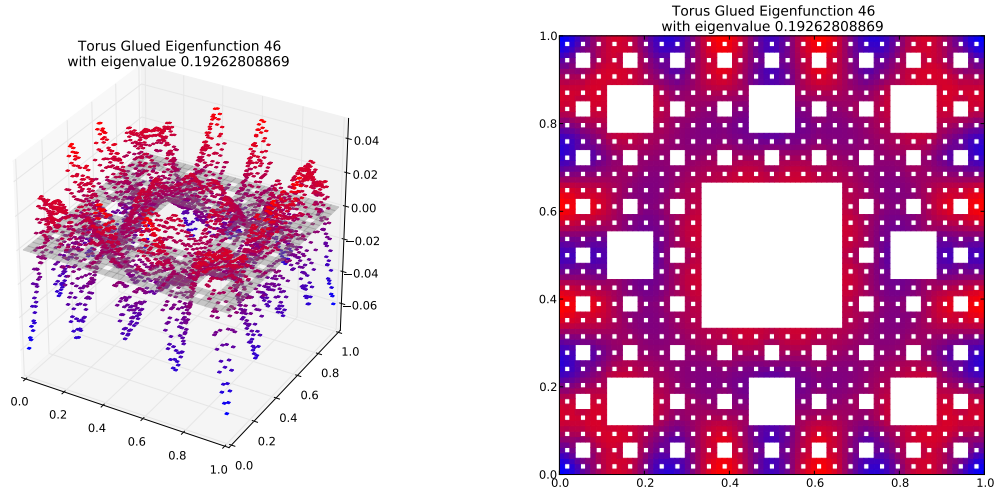


Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163453532958$

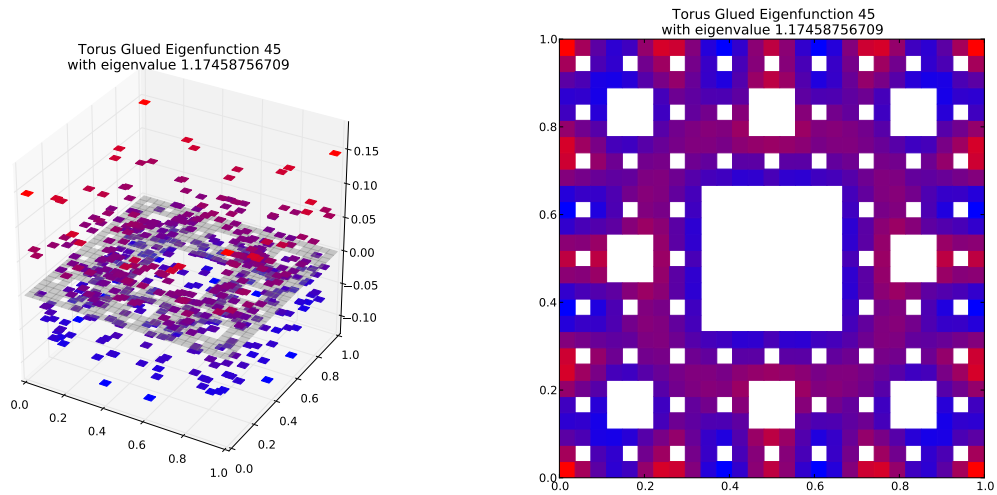
Dot Value: 0.0031067537279582114

## 47 $M = 4$ Eigenfunction 46

$M = 4$  Eigenfunction 46 has eigenvalue 0.19262808869



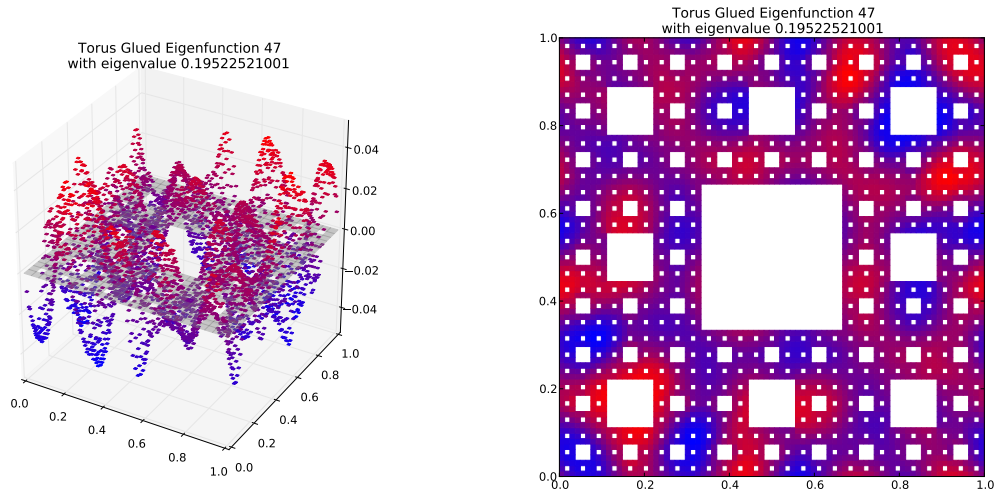
Compare to  $m = 3$  eigenspace with eigenvalue 1.17458756709



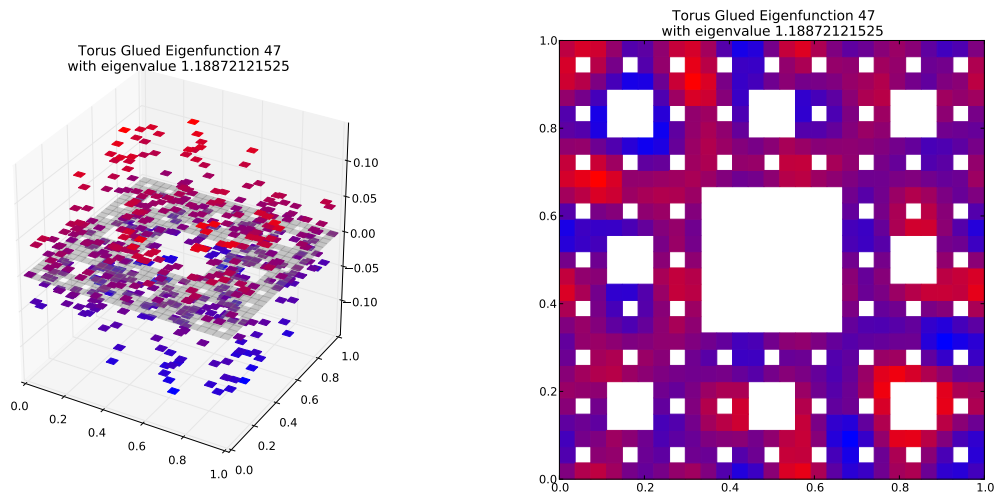
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163996362712$   
Dot Value: 0.006324325926818308

## 48 $M = 4$ Eigenfunction 47

$M = 4$  Eigenfunction 47 has eigenvalue 0.19522521001



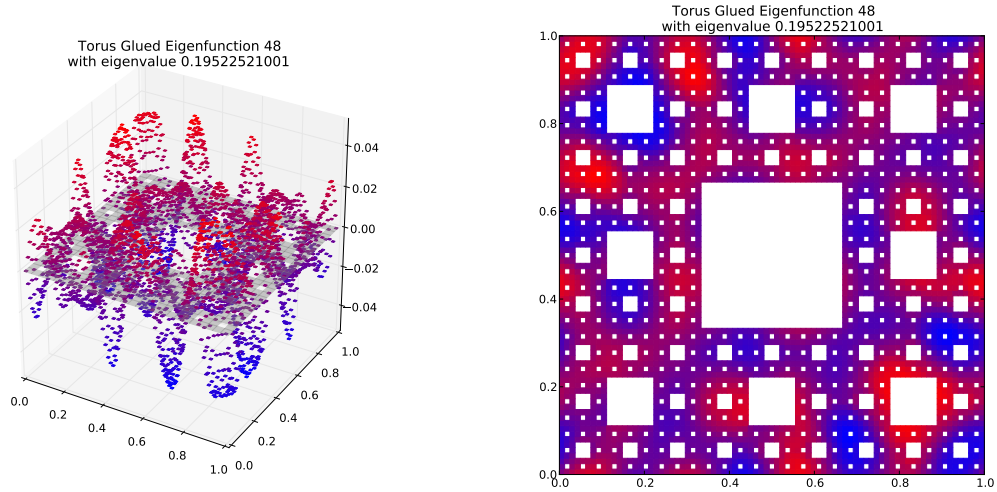
Compare to  $m = 3$  eigenspace with eigenvalue 1.18872121525  
(Note: Eigenspace Dimension  $> 1$ )



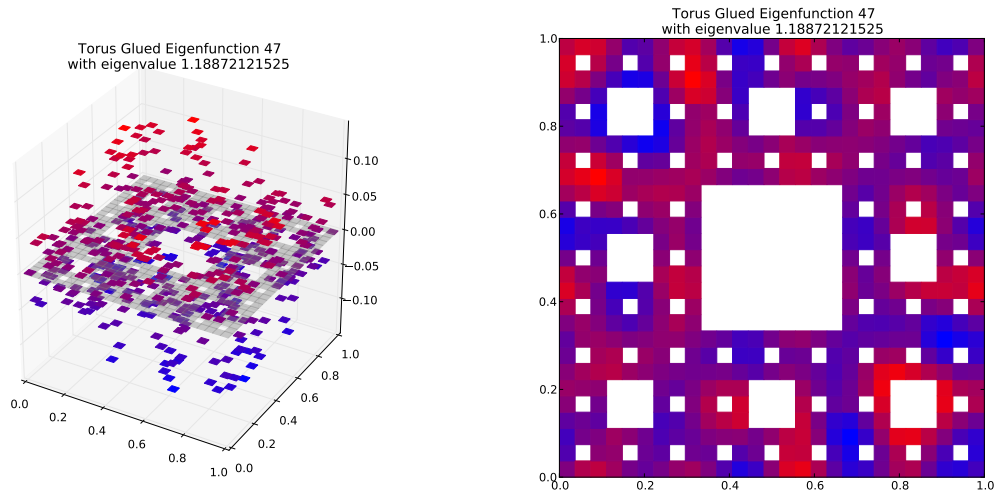
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.164231282748$   
Dot Value: 0.004743757662519443

## 49 $M = 4$ Eigenfunction 48

$M = 4$  Eigenfunction 48 has eigenvalue 0.19522521001



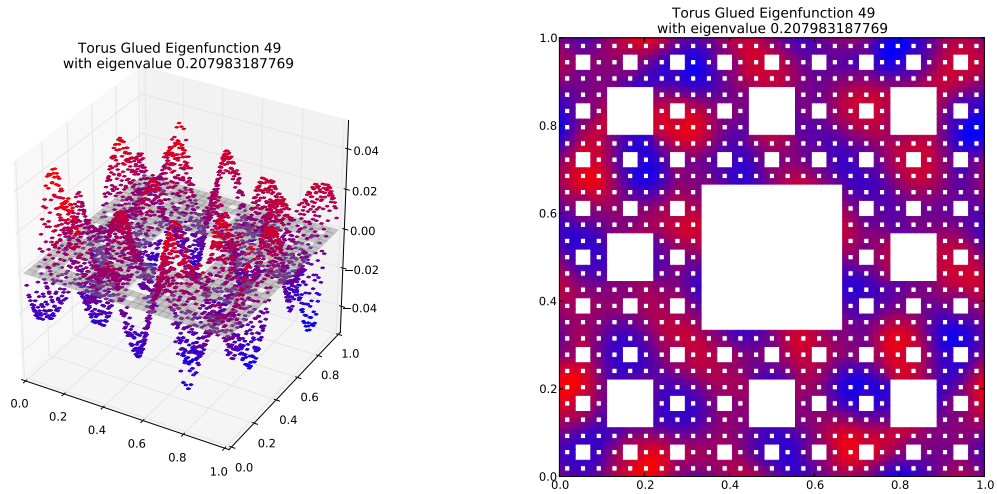
Compare to  $m = 3$  eigenspace with eigenvalue 1.18872121525  
(Note: Eigenspace Dimension  $> 1$ )



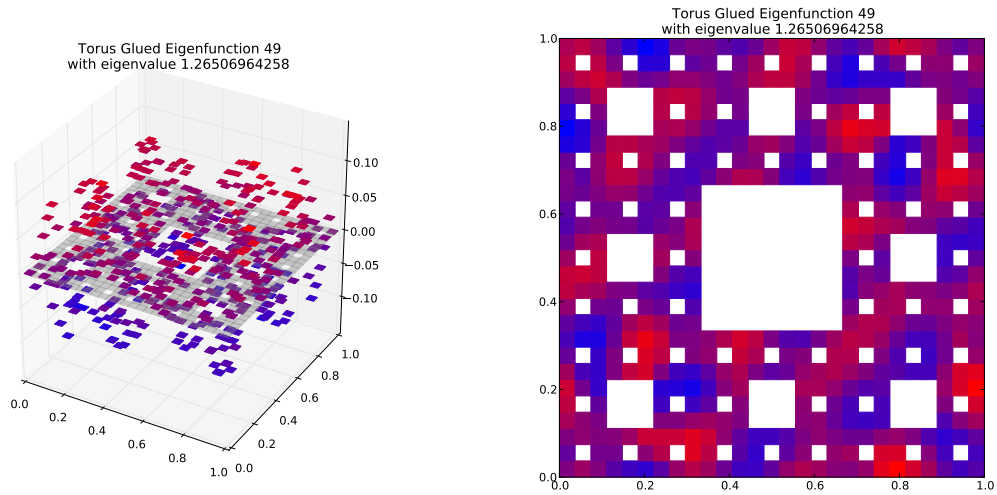
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.164231282748$   
Dot Value: 0.004743757662518777

## 50 $M = 4$ Eigenfunction 49

$M = 4$  Eigenfunction 49 has eigenvalue 0.207983187769



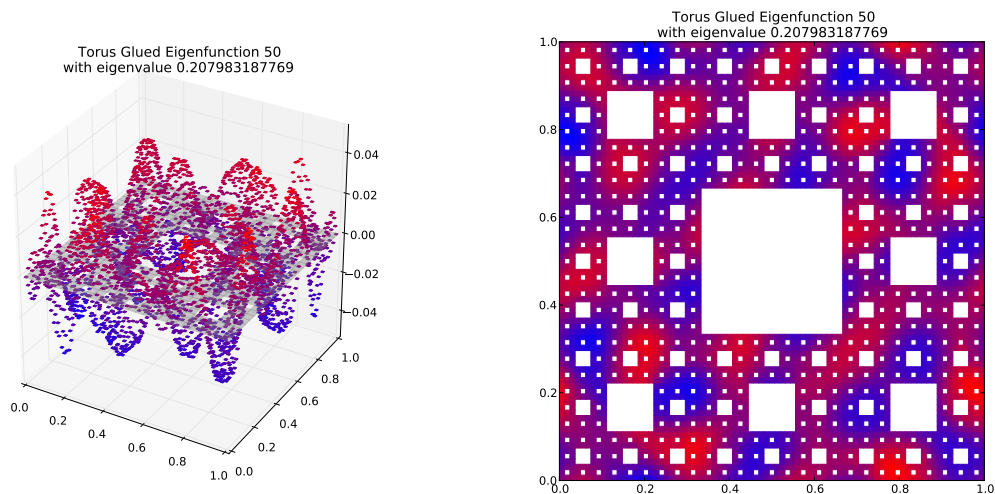
Compare to  $m = 3$  eigenspace with eigenvalue 1.26506964258  
(Note: Eigenspace Dimension  $> 1$ )



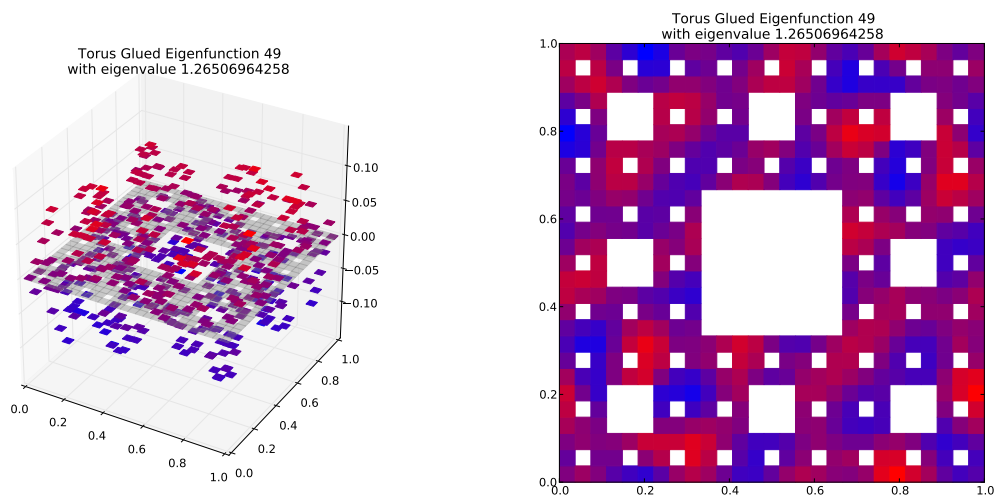
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.164404536137$   
Dot Value: 0.005233850299422027

## 51 $M = 4$ Eigenfunction 50

$M = 4$  Eigenfunction 50 has eigenvalue 0.207983187769



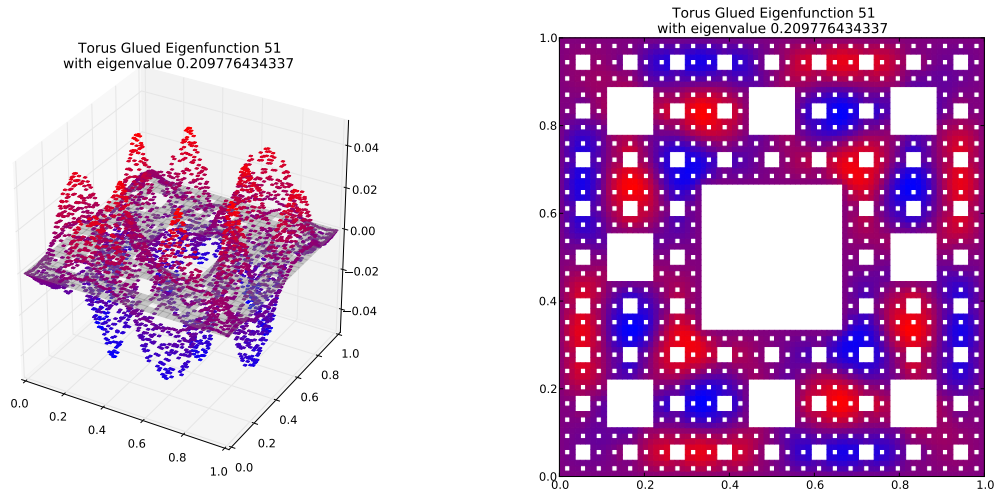
Compare to  $m = 3$  eigenspace with eigenvalue 1.26506964258  
(Note: Eigenspace Dimension  $> 1$ )



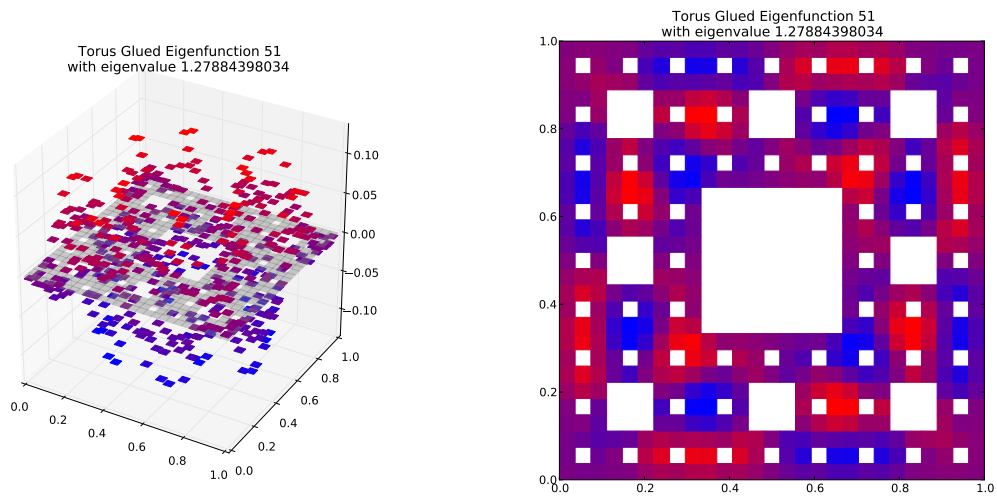
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.164404536137$   
Dot Value: 0.005233850299421361

## 52 $M = 4$ Eigenfunction 51

$M = 4$  Eigenfunction 51 has eigenvalue 0.209776434337



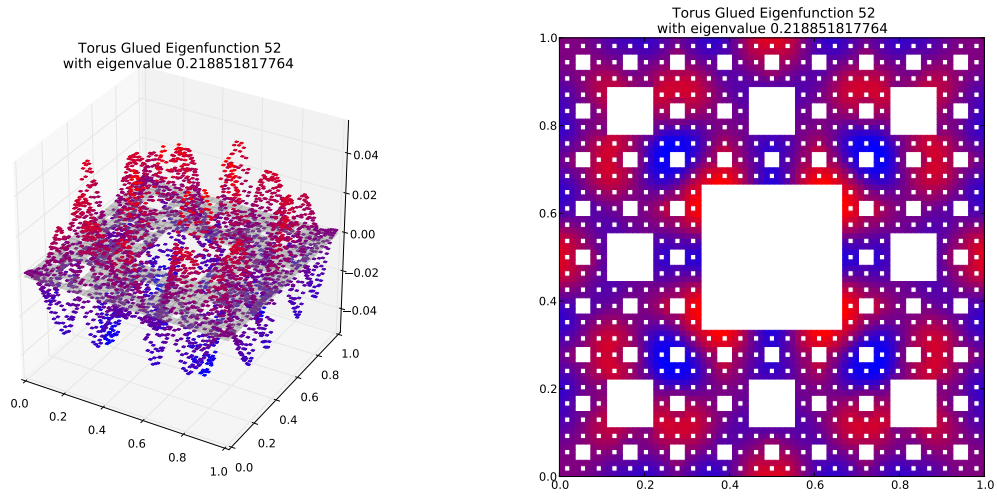
Compare to  $m = 3$  eigenspace with eigenvalue 1.27884398034



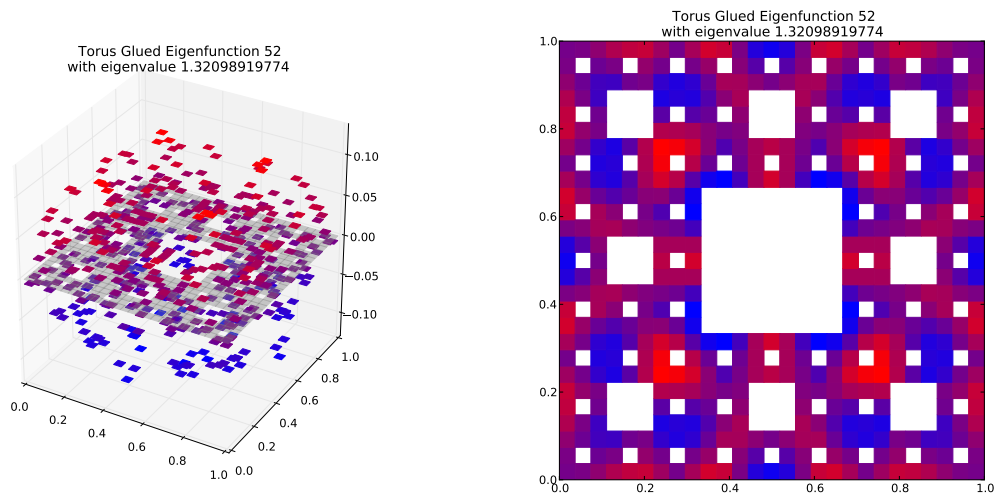
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.164035986846$   
Dot Value: 0.002697655878176053

### 53 $M = 4$ Eigenfunction 52

$M = 4$  Eigenfunction 52 has eigenvalue 0.218851817764



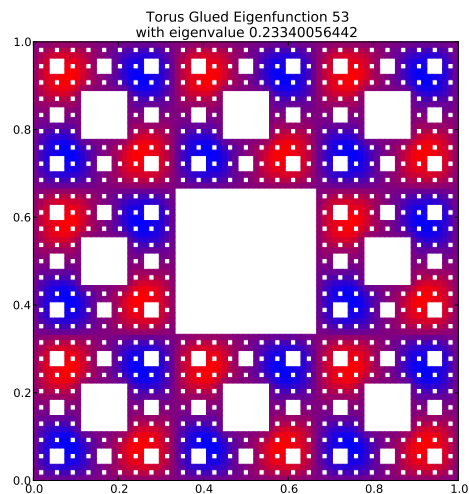
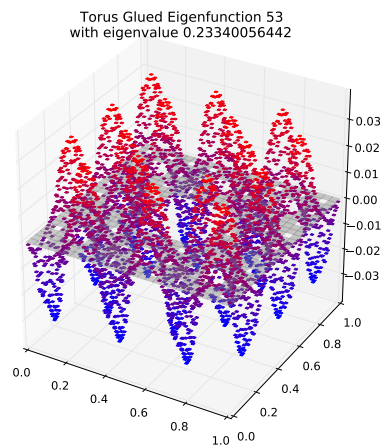
Compare to  $m = 3$  eigenspace with eigenvalue 1.32098919774



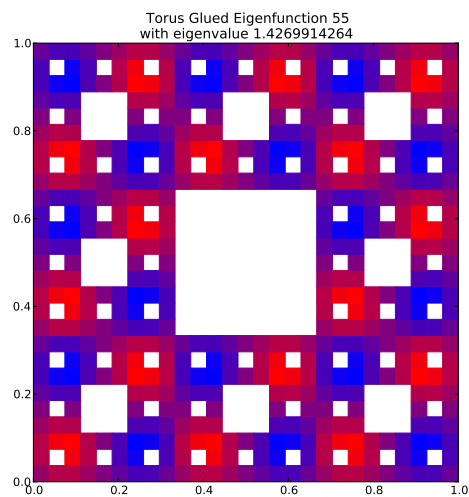
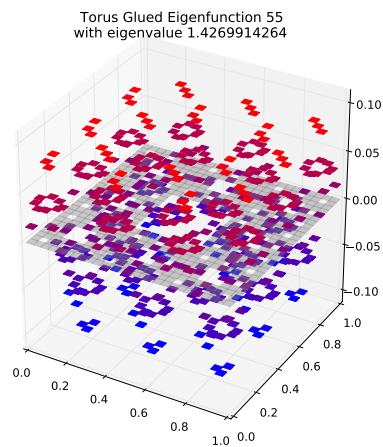
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.165672677823$   
Dot Value: 0.009311251250720964

## 54 $M = 4$ Eigenfunction 53

$M = 4$  Eigenfunction 53 has eigenvalue 0.23340056442



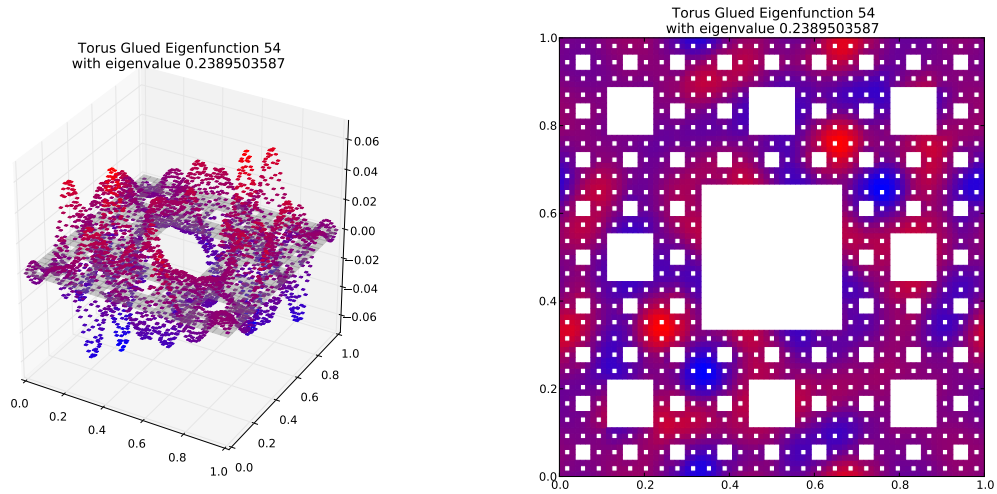
Compare to  $m = 3$  eigenspace with eigenvalue 1.4269914264



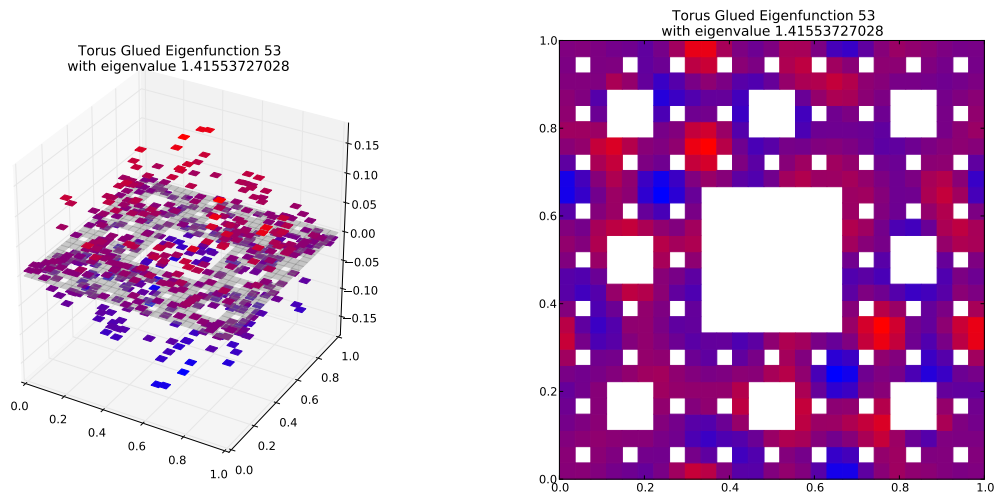
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.163561294133$   
Dot Value: 0.002541301941148988

## 55 $M = 4$ Eigenfunction 54

$M = 4$  Eigenfunction 54 has eigenvalue 0.2389503587



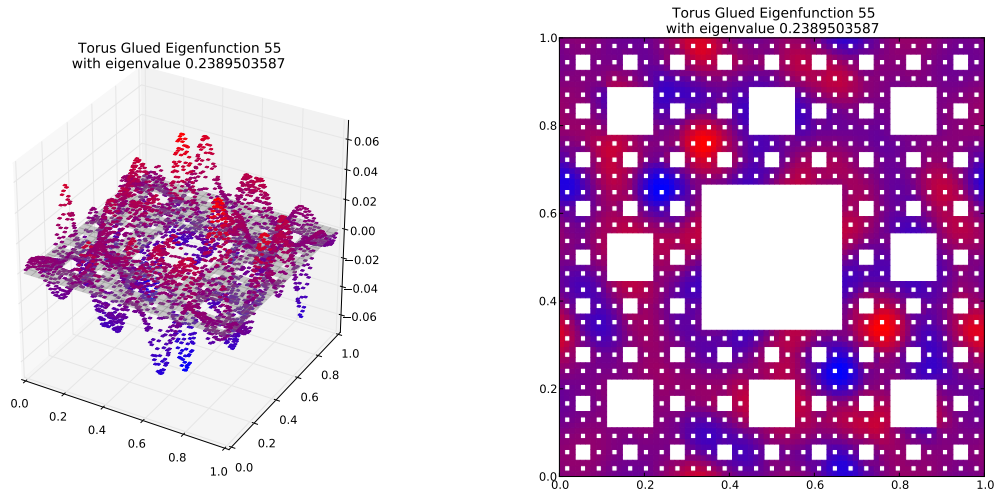
Compare to  $m = 3$  eigenspace with eigenvalue 1.41553727028  
(Note: Eigenspace Dimension  $> 1$ )



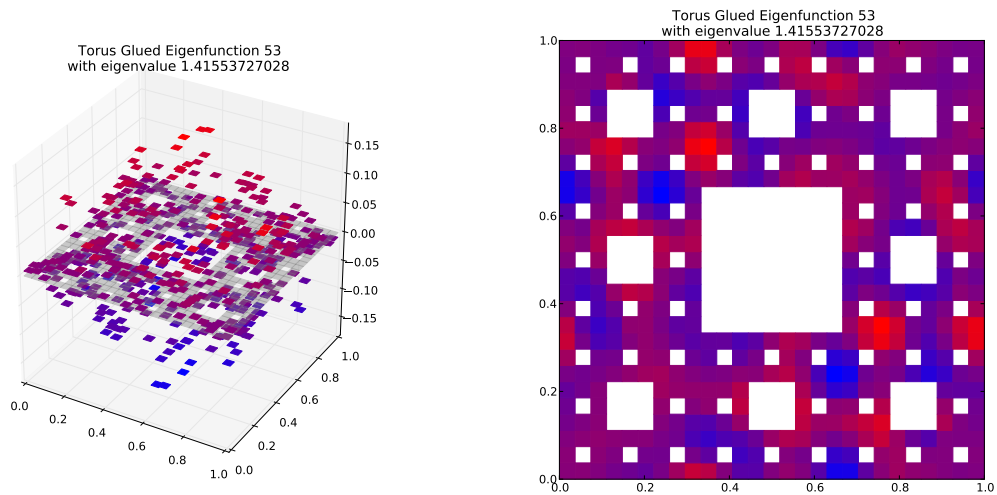
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.168805416654$   
Dot Value: 0.018286641088907207

## 56 $M = 4$ Eigenfunction 55

$M = 4$  Eigenfunction 55 has eigenvalue 0.2389503587



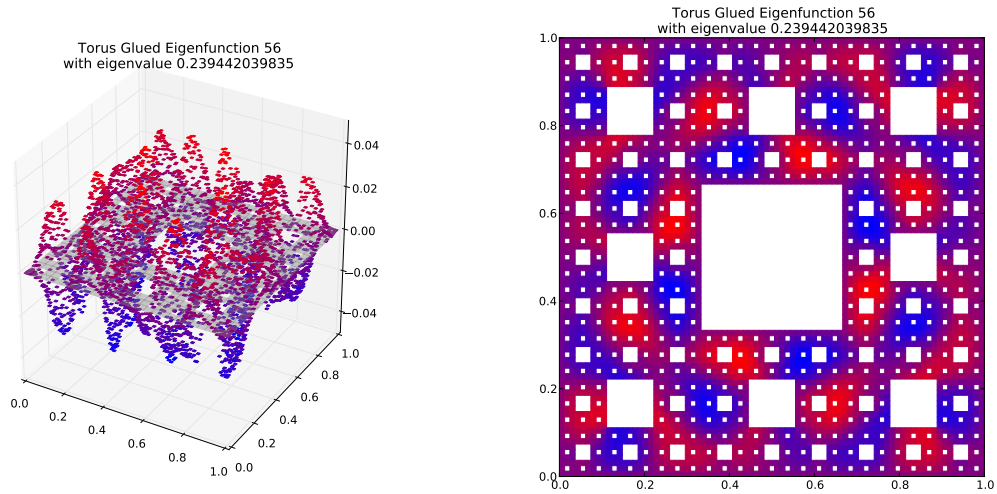
Compare to  $m = 3$  eigenspace with eigenvalue 1.41553727028  
(Note: Eigenspace Dimension  $> 1$ )



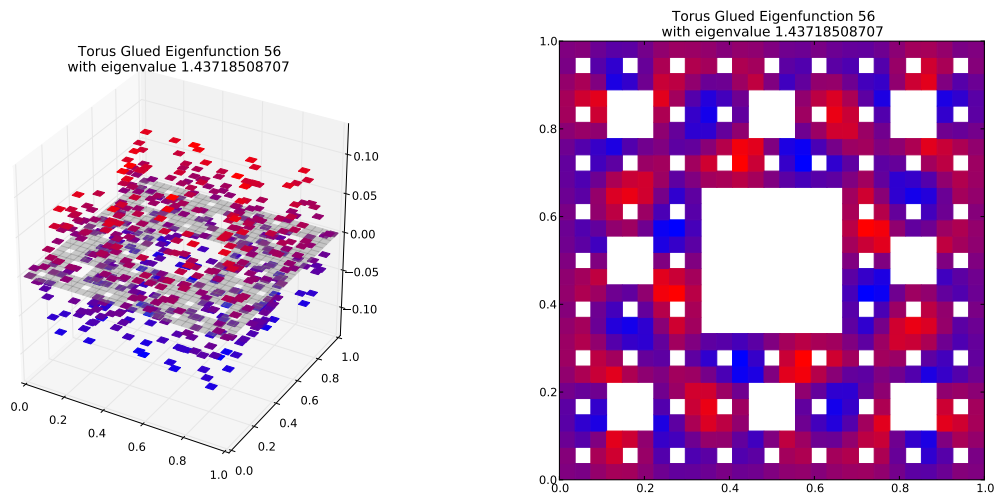
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.168805416654$   
Dot Value: 0.018286641088903433

## 57 $M = 4$ Eigenfunction 56

$M = 4$  Eigenfunction 56 has eigenvalue 0.239442039835



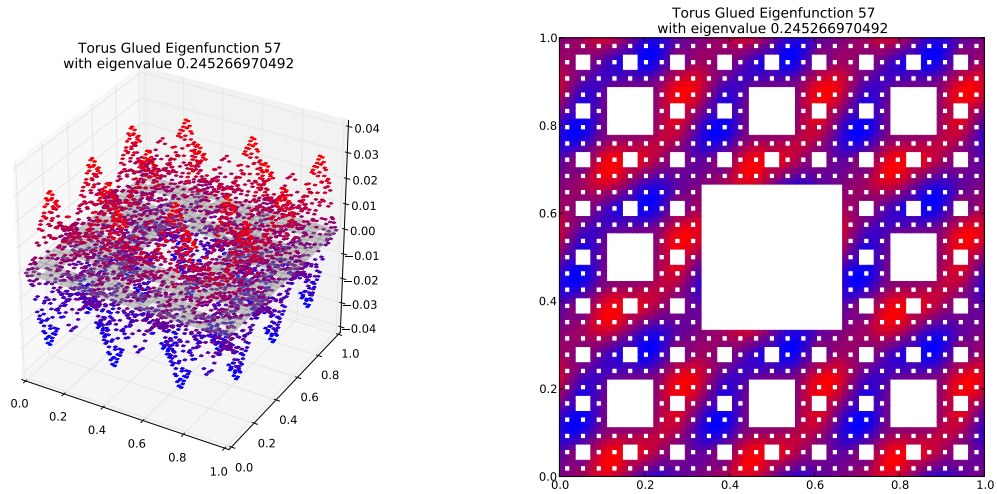
Compare to  $m = 3$  eigenspace with eigenvalue 1.43718508707



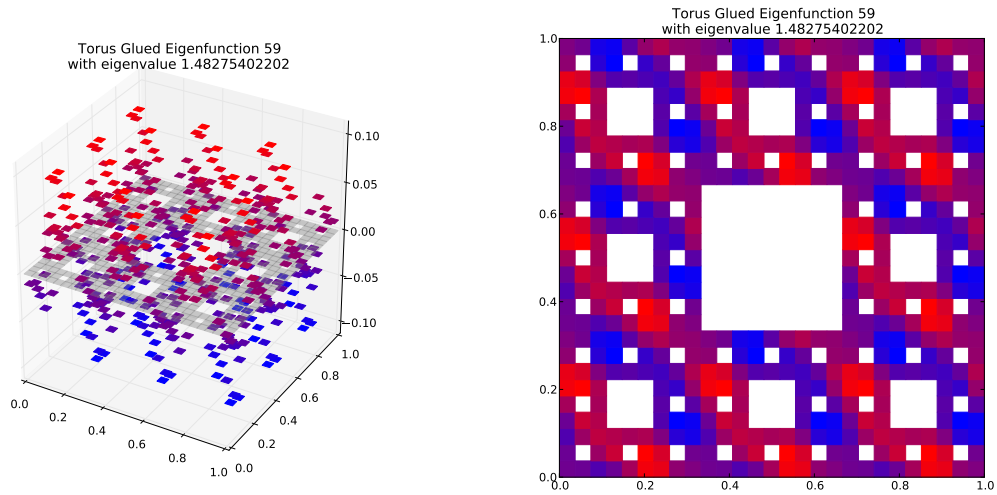
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.166604873645$   
Dot Value: 0.010953775722159498

## 58 $M = 4$ Eigenfunction 57

$M = 4$  Eigenfunction 57 has eigenvalue 0.245266970492



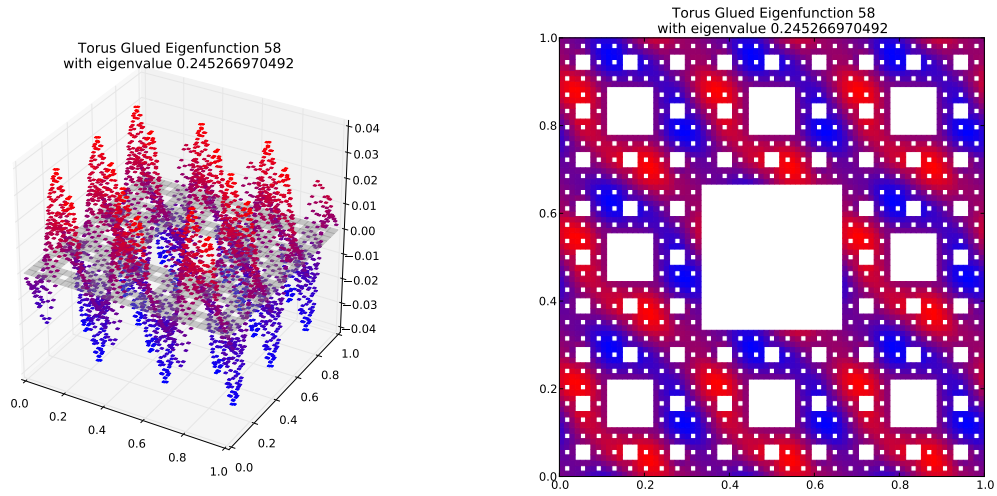
Compare to  $m = 3$  eigenspace with eigenvalue 1.48275402202  
(Note: Eigenspace Dimension  $> 1$ )



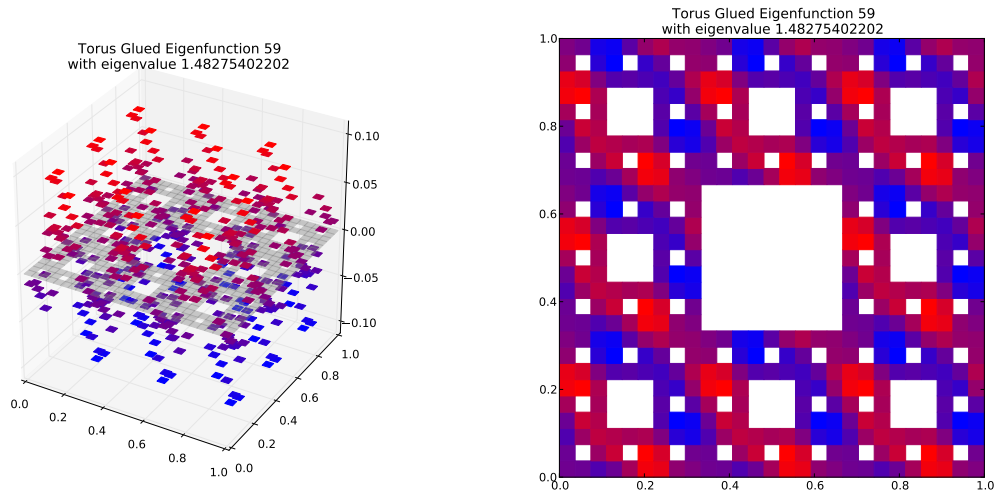
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.165413121023$   
Dot Value: 0.004649913969036246

## 59 $M = 4$ Eigenfunction 58

$M = 4$  Eigenfunction 58 has eigenvalue 0.245266970492



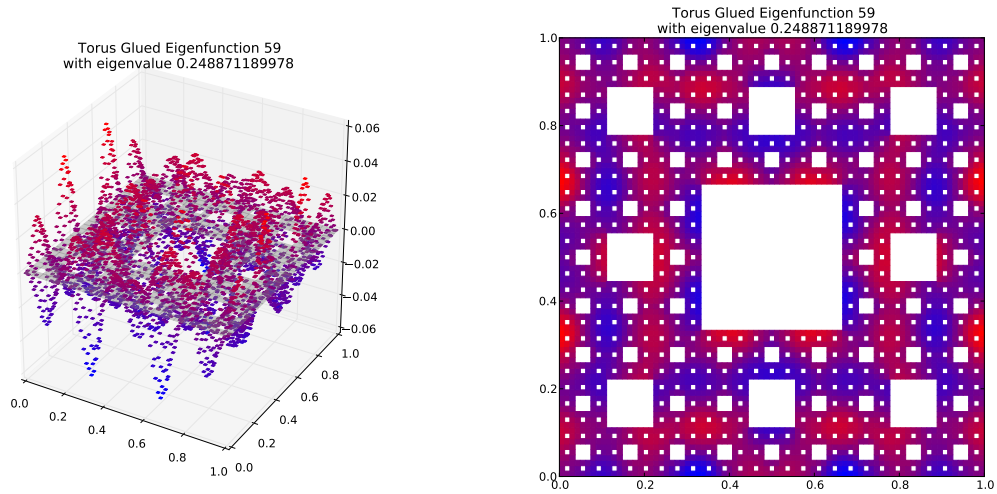
Compare to  $m = 3$  eigenspace with eigenvalue 1.48275402202  
(Note: Eigenspace Dimension  $> 1$ )



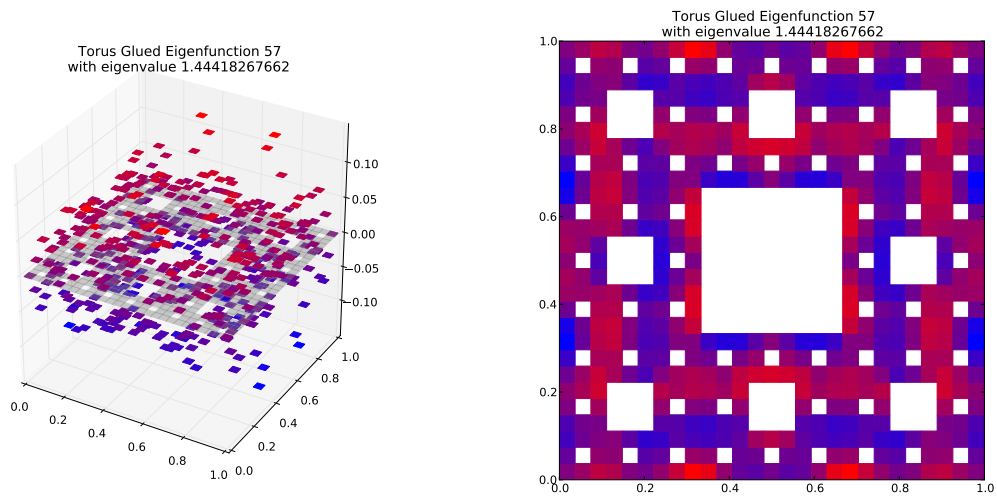
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.165413121023$   
Dot Value: 0.004649913969036135

## 60 $M = 4$ Eigenfunction 59

$M = 4$  Eigenfunction 59 has eigenvalue 0.248871189978



Compare to  $m = 3$  eigenspace with eigenvalue 1.44418267662

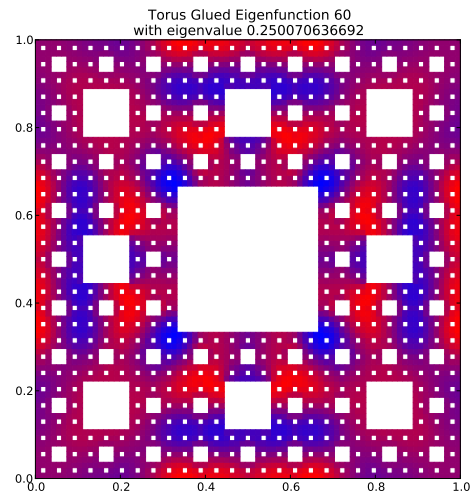
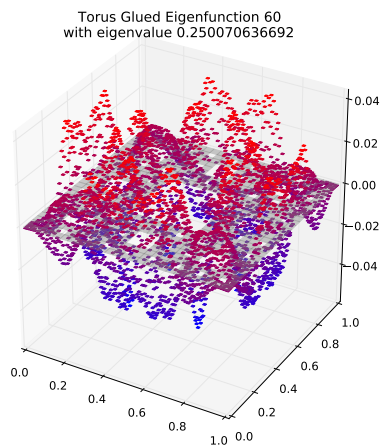


Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.172326668923$

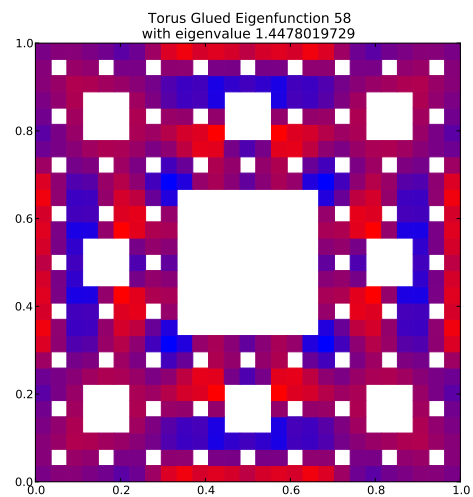
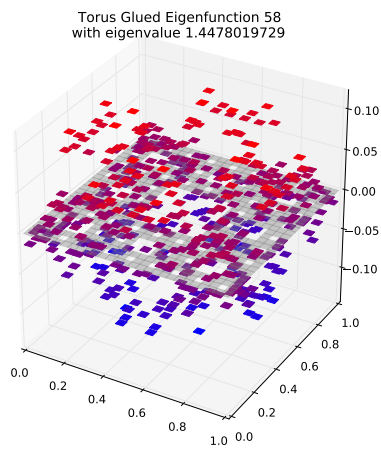
Dot Value: 0.0069941265652130324

## 61 $M = 4$ Eigenfunction 60

$M = 4$  Eigenfunction 60 has eigenvalue 0.250070636692



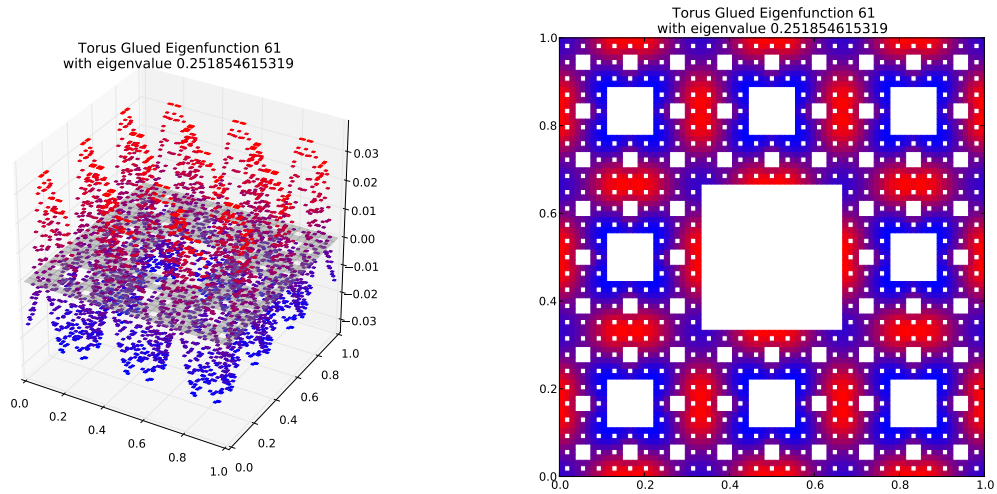
Compare to  $m = 3$  eigenspace with eigenvalue 1.4478019729



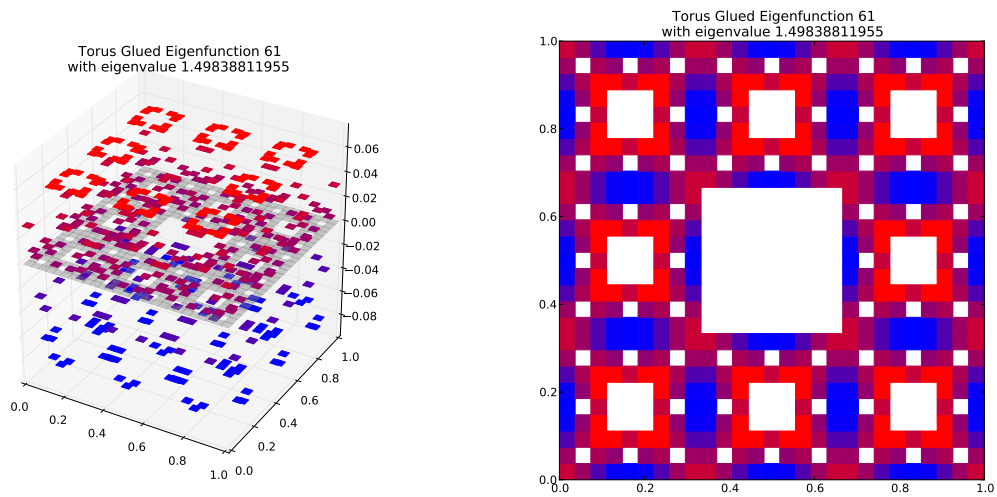
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.172724337563$   
Dot Value: 0.006878145154251336

## 62 $M = 4$ Eigenfunction 61

$M = 4$  Eigenfunction 61 has eigenvalue 0.251854615319



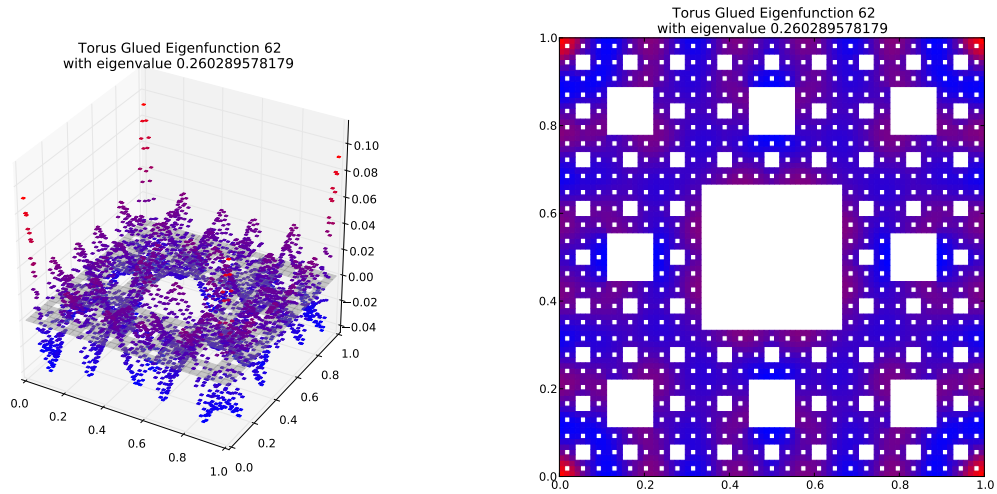
Compare to  $m = 3$  eigenspace with eigenvalue 1.49838811955



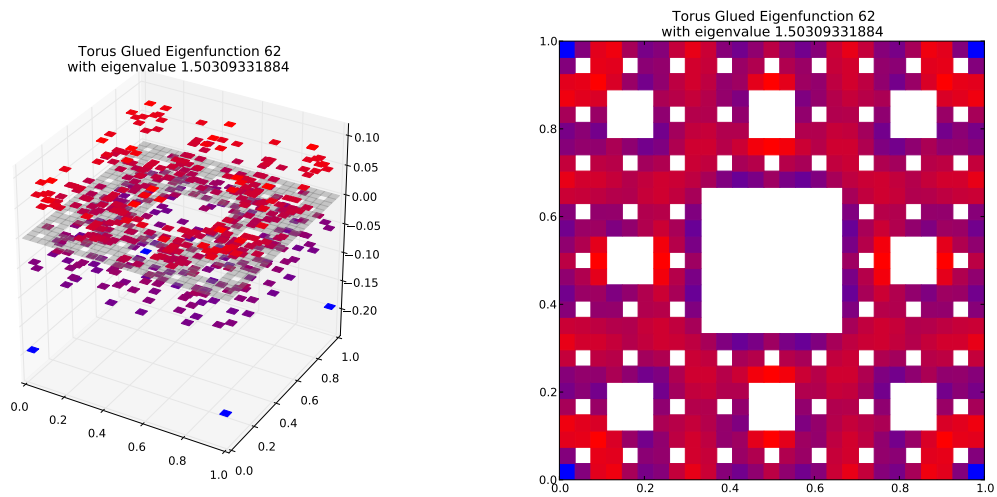
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.16808369743$   
Dot Value: 0.0028042394659021364

## 63 $M = 4$ Eigenfunction 62

$M = 4$  Eigenfunction 62 has eigenvalue 0.260289578179



Compare to  $m = 3$  eigenspace with eigenvalue 1.50309331884

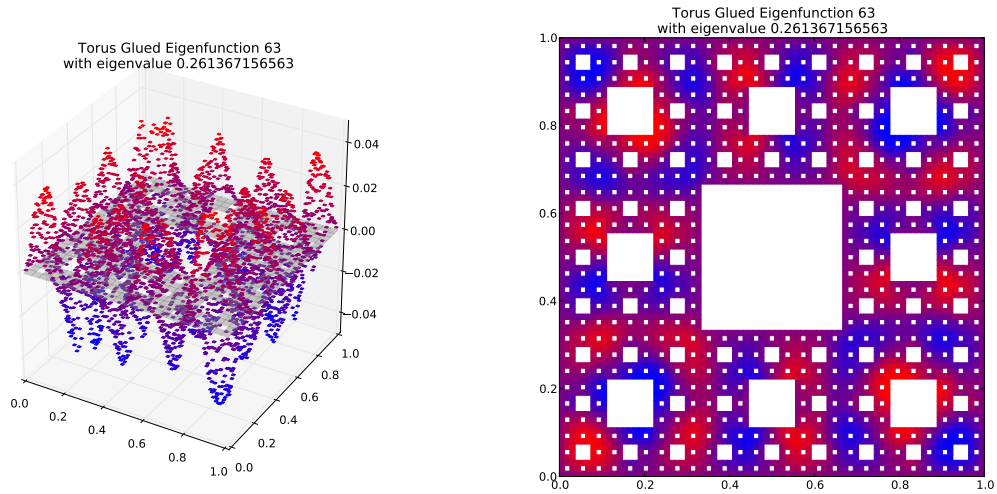


Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.173169273602$

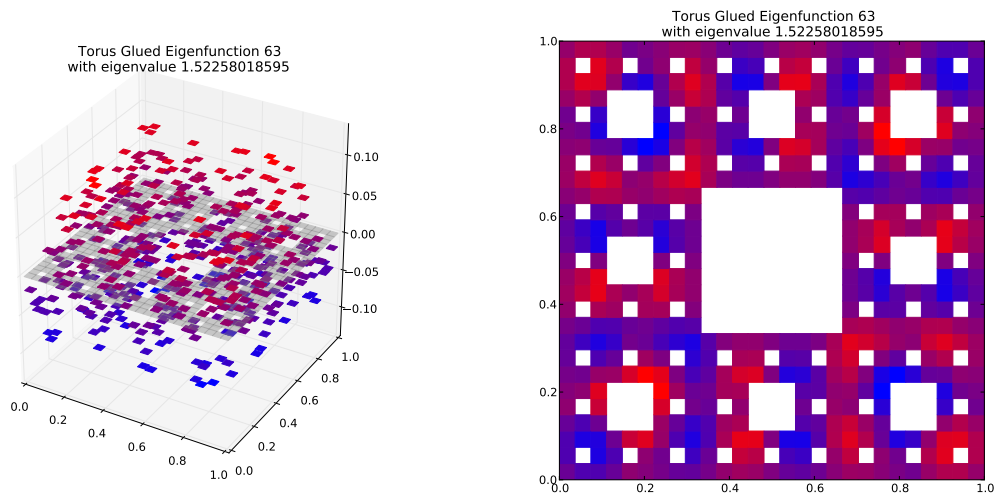
Dot Value: 0.008877961471446372

## 64 $M = 4$ Eigenfunction 63

$M = 4$  Eigenfunction 63 has eigenvalue 0.261367156563



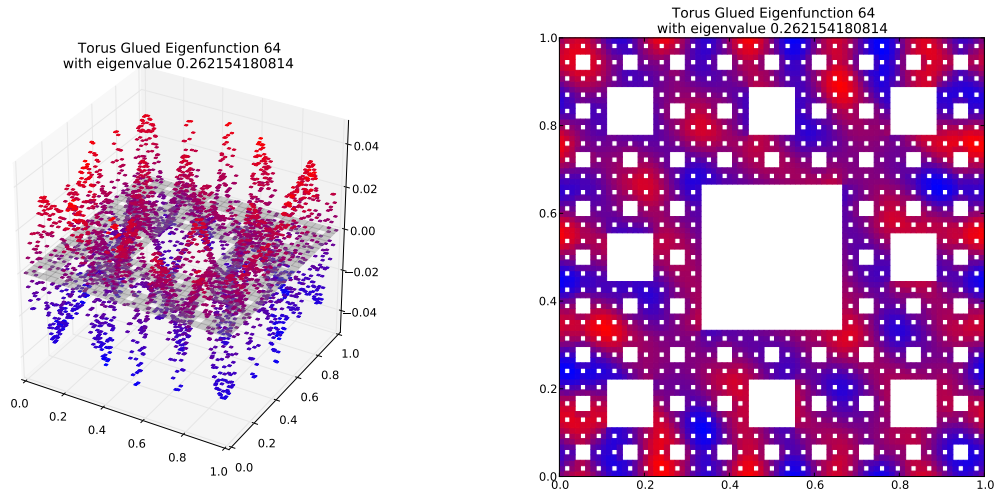
Compare to  $m = 3$  eigenspace with eigenvalue 1.52258018595



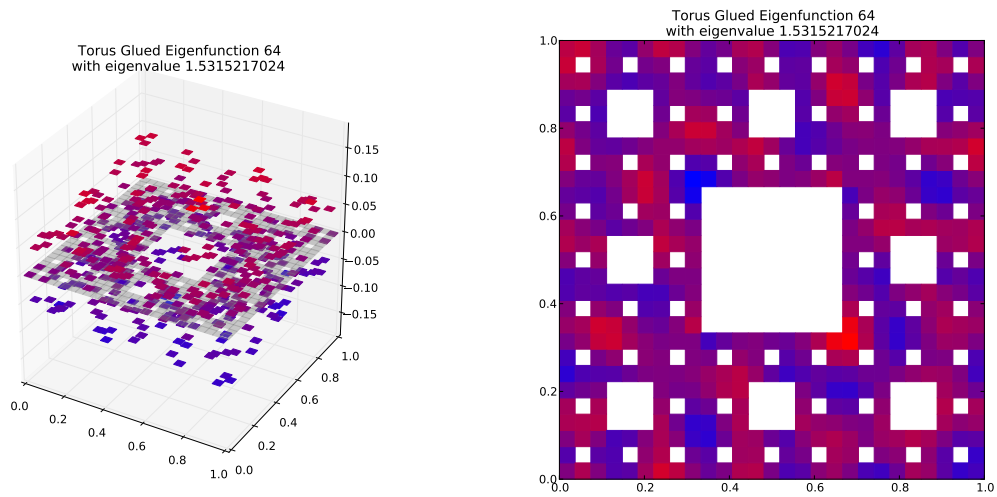
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.171660684262$   
Dot Value: 0.008672777635105766

## 65 $M = 4$ Eigenfunction 64

$M = 4$  Eigenfunction 64 has eigenvalue 0.262154180814



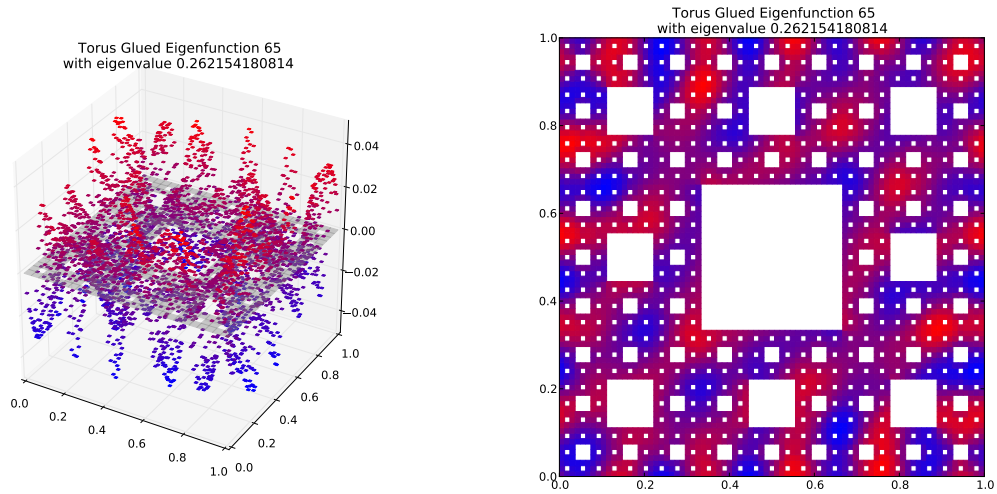
Compare to  $m = 3$  eigenspace with eigenvalue 1.5315217024  
(Note: Eigenspace Dimension  $> 1$ )



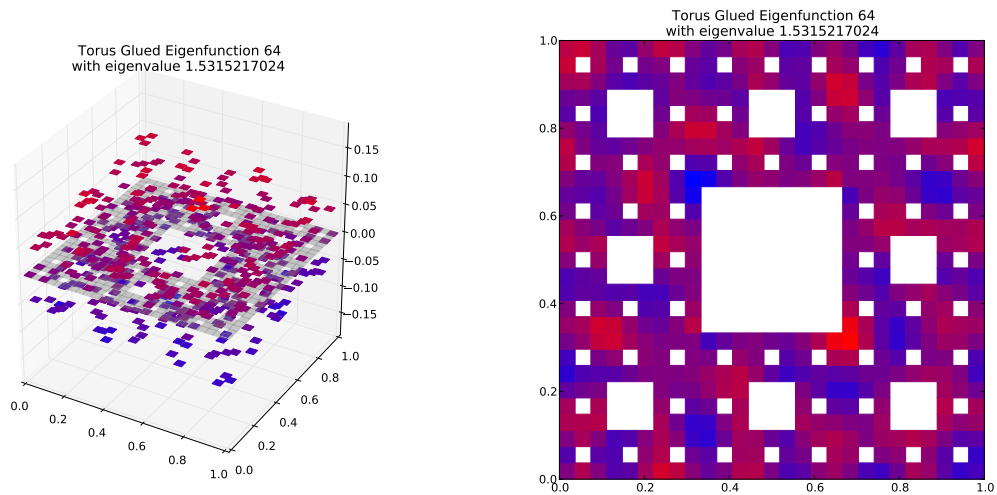
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.171172357795$   
Dot Value: 0.08380680319549105

## 66 $M = 4$ Eigenfunction 65

$M = 4$  Eigenfunction 65 has eigenvalue 0.262154180814



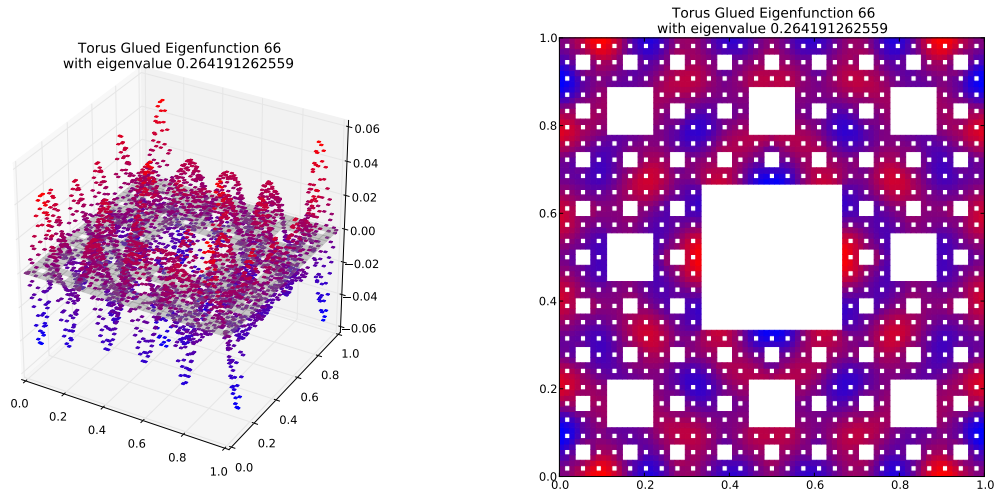
Compare to  $m = 3$  eigenspace with eigenvalue 1.5315217024  
(Note: Eigenspace Dimension  $> 1$ )



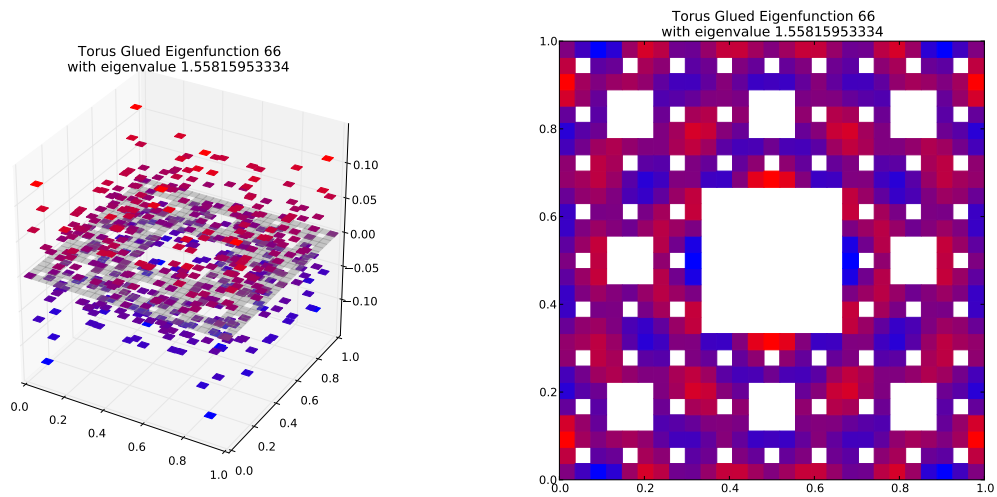
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.171172357795$   
Dot Value: 0.08380680319548384

## 67 $M = 4$ Eigenfunction 66

$M = 4$  Eigenfunction 66 has eigenvalue 0.264191262559



Compare to  $m = 3$  eigenspace with eigenvalue 1.55815953334

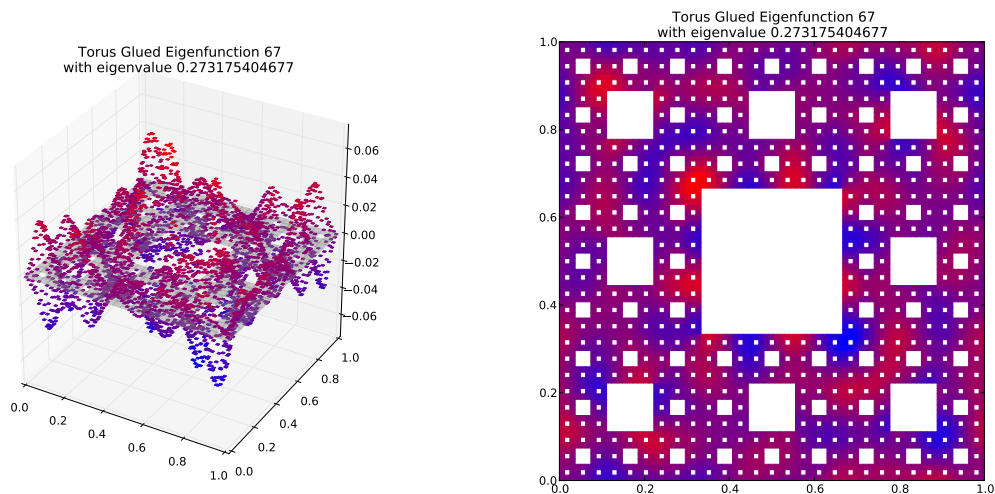


Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.169553410229$

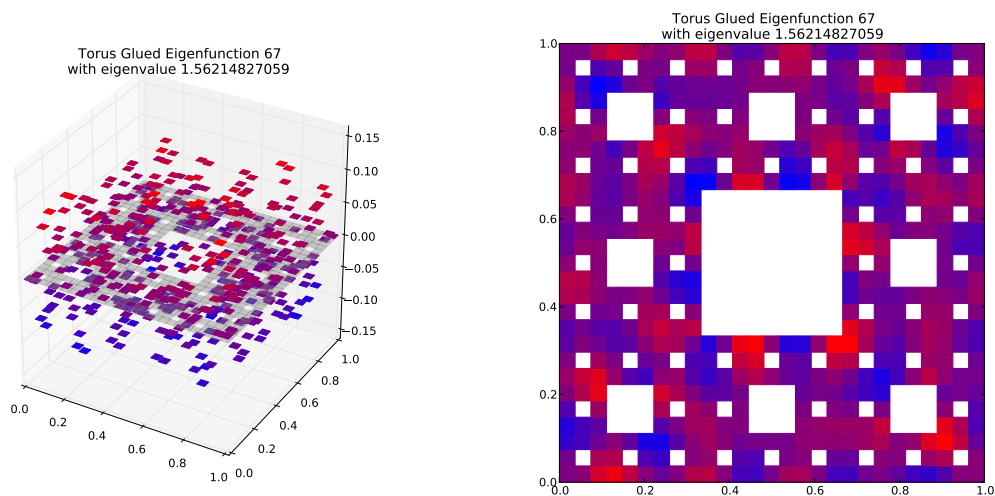
Dot Value: 0.006837101652793498

## 68 $M = 4$ Eigenfunction 67

$M = 4$  Eigenfunction 67 has eigenvalue 0.273175404677



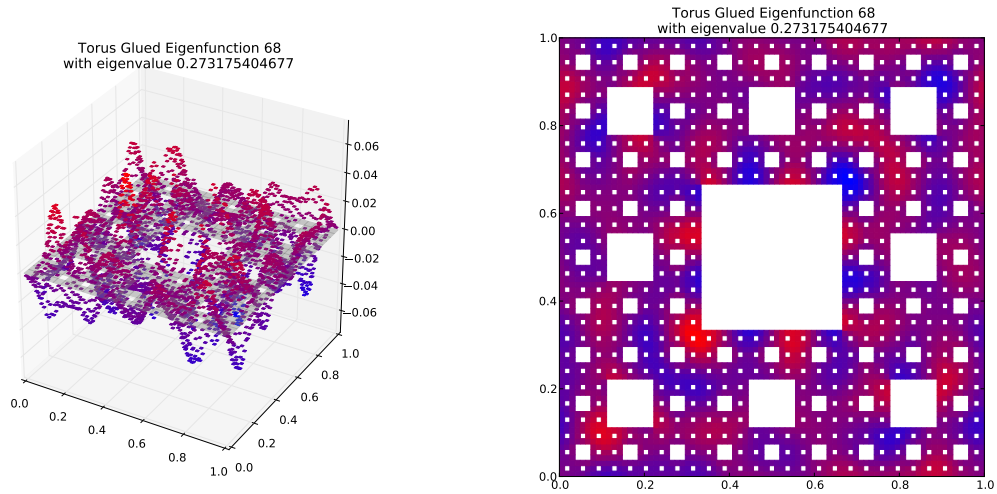
Compare to  $m = 3$  eigenspace with eigenvalue 1.56214827059  
(Note: Eigenspace Dimension  $> 1$ )



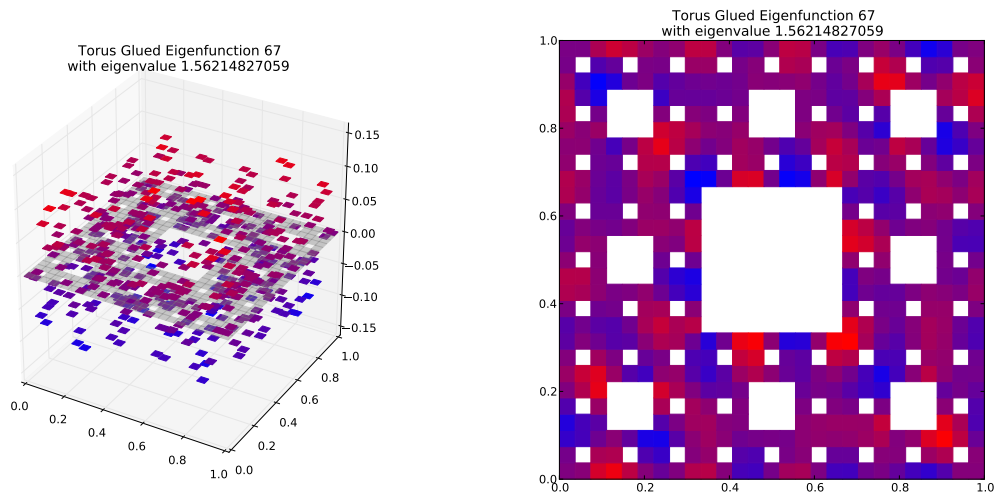
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.174871623789$   
Dot Value: 0.07953633488916056

## 69 $M = 4$ Eigenfunction 68

$M = 4$  Eigenfunction 68 has eigenvalue 0.273175404677



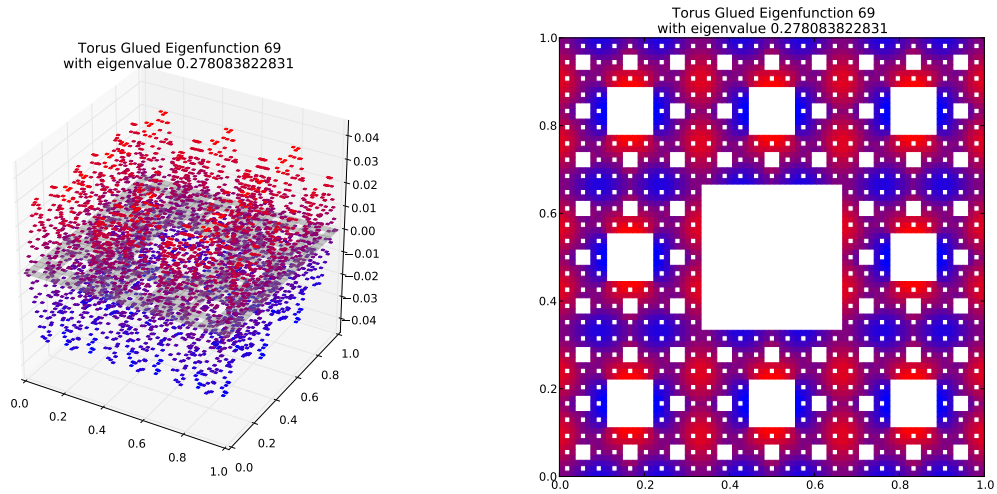
Compare to  $m = 3$  eigenspace with eigenvalue 1.56214827059  
(Note: Eigenspace Dimension  $> 1$ )



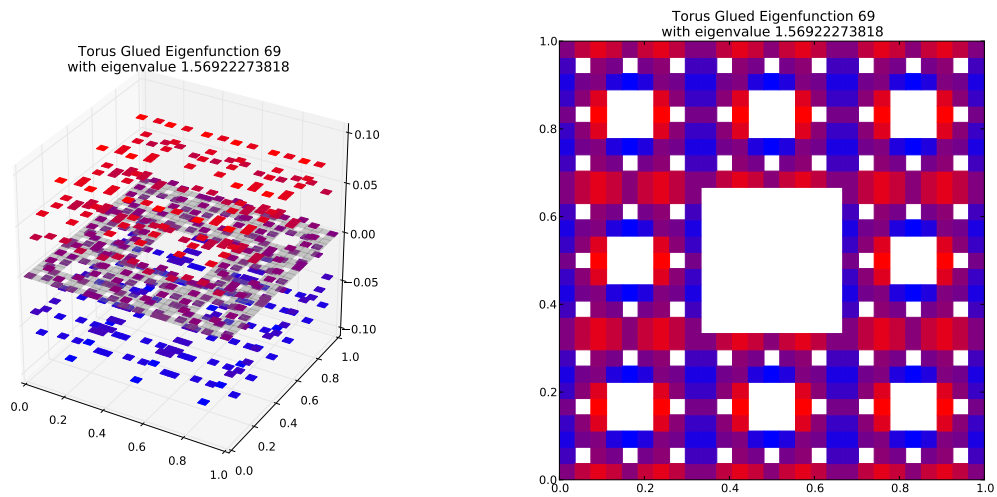
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.174871623789$   
Dot Value: 0.07953633488916068

## 70 $M = 4$ Eigenfunction 69

$M = 4$  Eigenfunction 69 has eigenvalue 0.278083822831



Compare to  $m = 3$  eigenspace with eigenvalue 1.56922273818

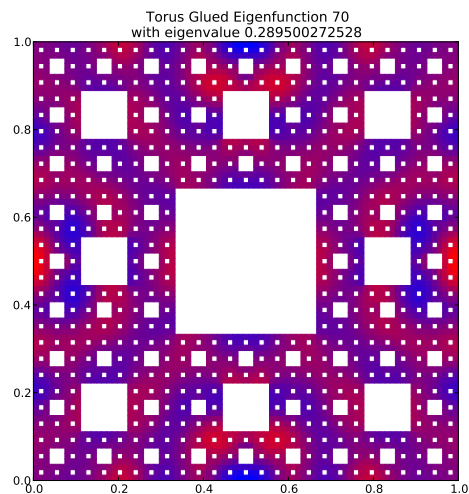
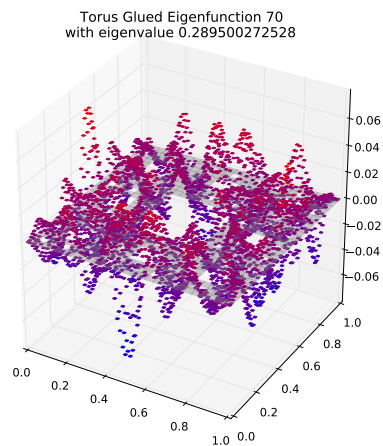


Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.177211186191$

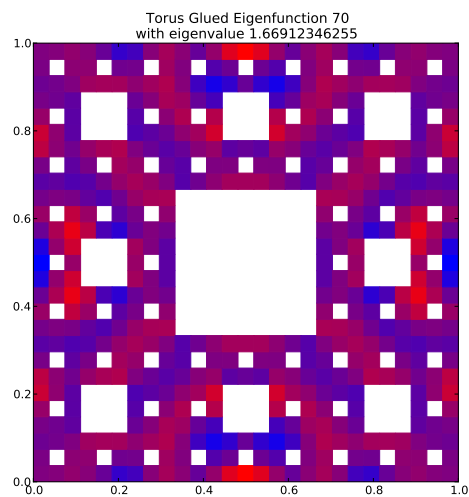
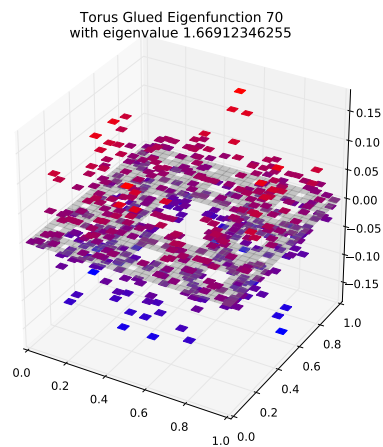
Dot Value: 0.0008895272340455618

## 71 $M = 4$ Eigenfunction 70

$M = 4$  Eigenfunction 70 has eigenvalue 0.289500272528



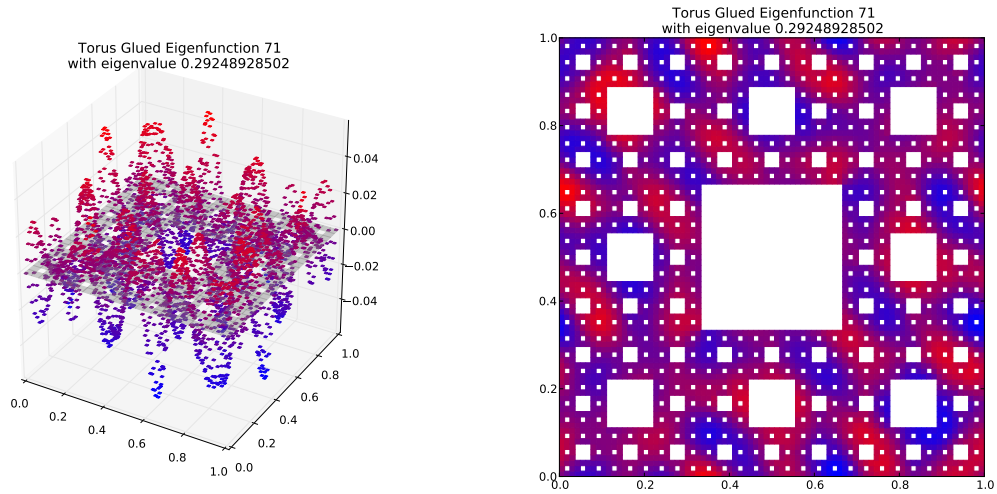
Compare to  $m = 3$  eigenspace with eigenvalue 1.66912346255



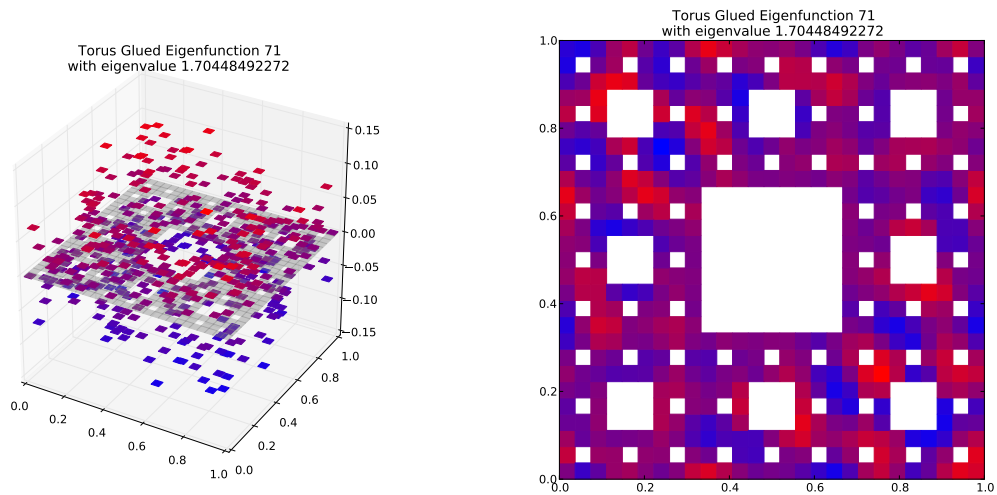
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.173444492888$   
Dot Value: 0.03378260200849825

## 72 $M = 4$ Eigenfunction 71

$M = 4$  Eigenfunction 71 has eigenvalue 0.29248928502



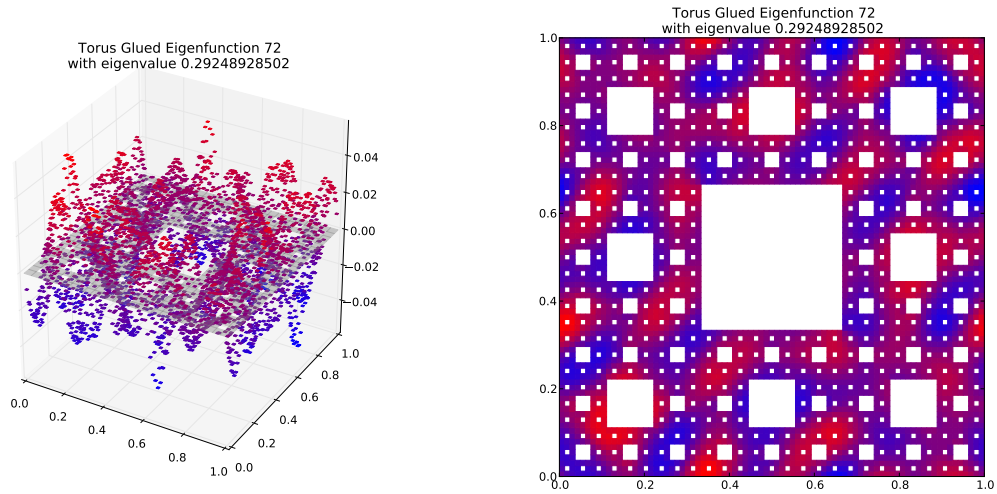
Compare to  $m = 3$  eigenspace with eigenvalue 1.70448492272  
(Note: Eigenspace Dimension  $> 1$ )



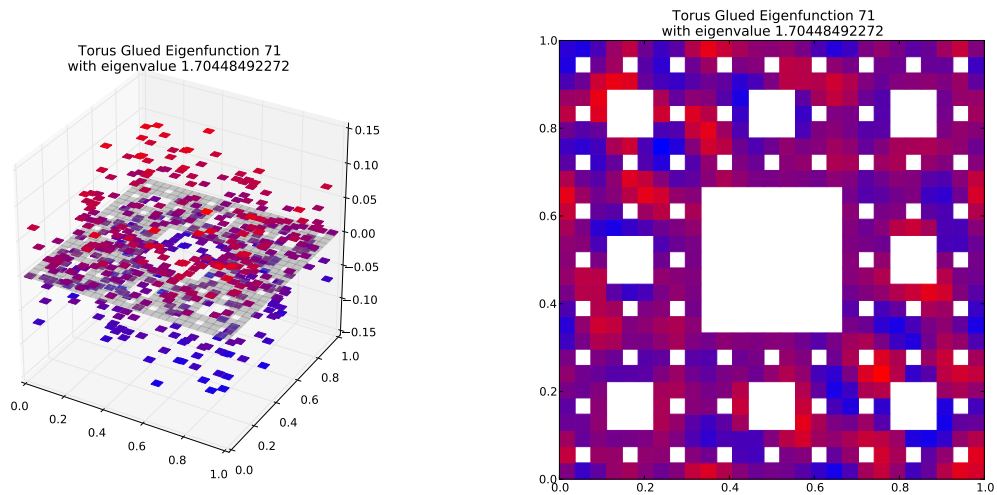
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.171599807732$   
Dot Value: 0.23791185134787707

### 73 $M = 4$ Eigenfunction 72

$M = 4$  Eigenfunction 72 has eigenvalue 0.29248928502



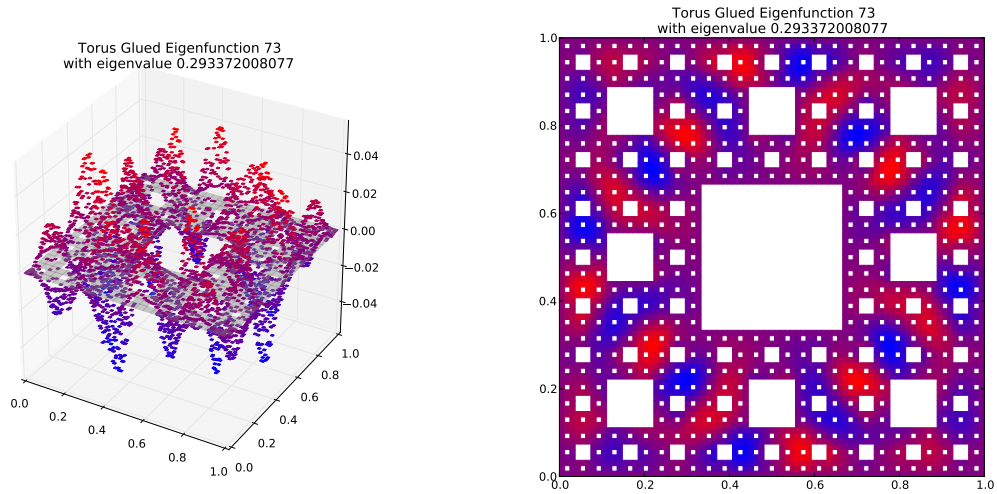
Compare to  $m = 3$  eigenspace with eigenvalue 1.70448492272  
(Note: Eigenspace Dimension  $> 1$ )



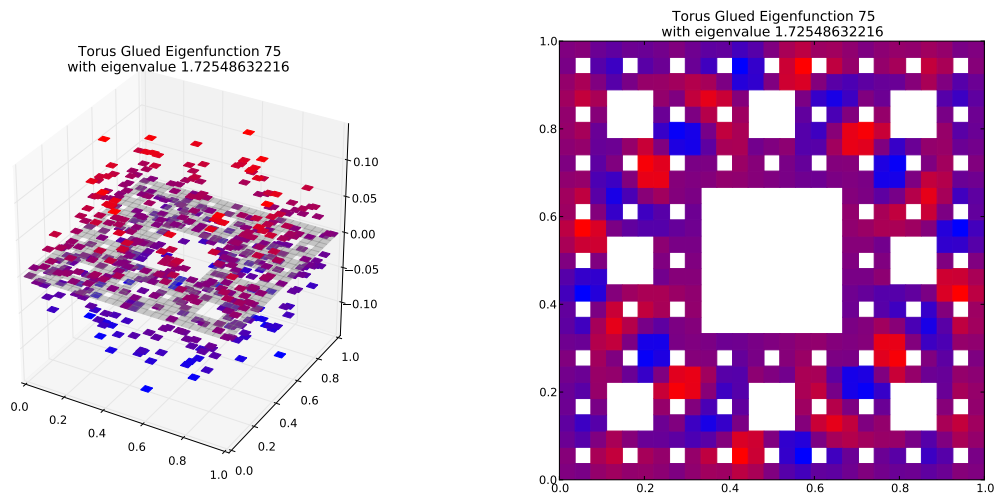
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.171599807732$   
Dot Value: 0.2379118513478925

## 74 $M = 4$ Eigenfunction 73

$M = 4$  Eigenfunction 73 has eigenvalue 0.293372008077



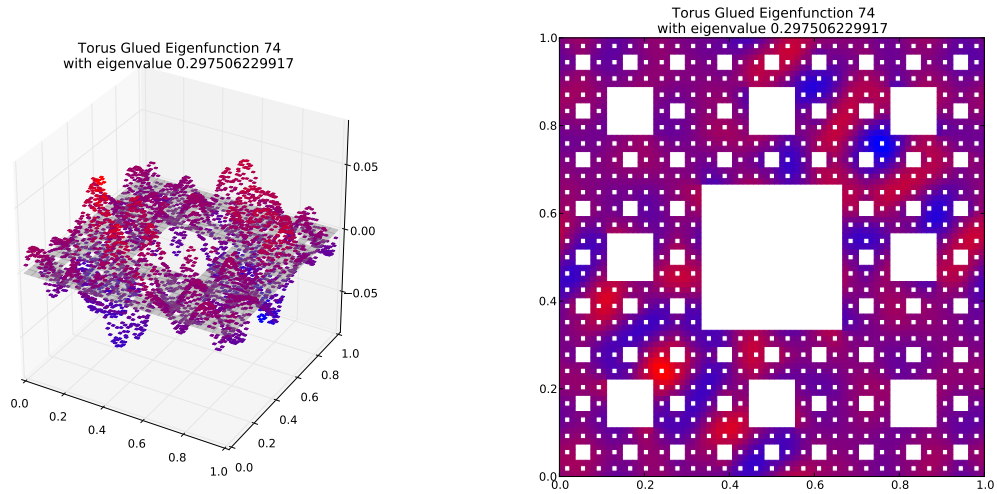
Compare to  $m = 3$  eigenspace with eigenvalue 1.72548632216



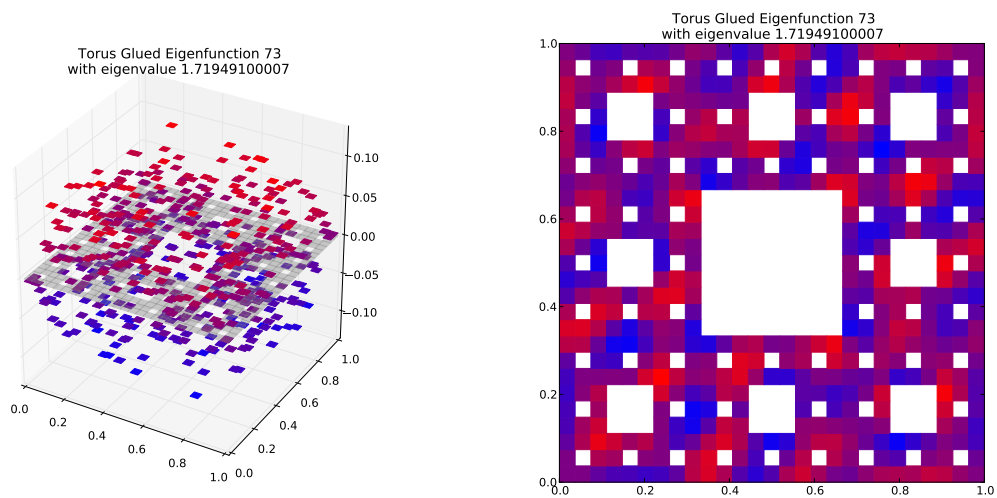
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.170022795492$   
Dot Value: 0.00917838779639335

## 75 $M = 4$ Eigenfunction 74

$M = 4$  Eigenfunction 74 has eigenvalue 0.297506229917



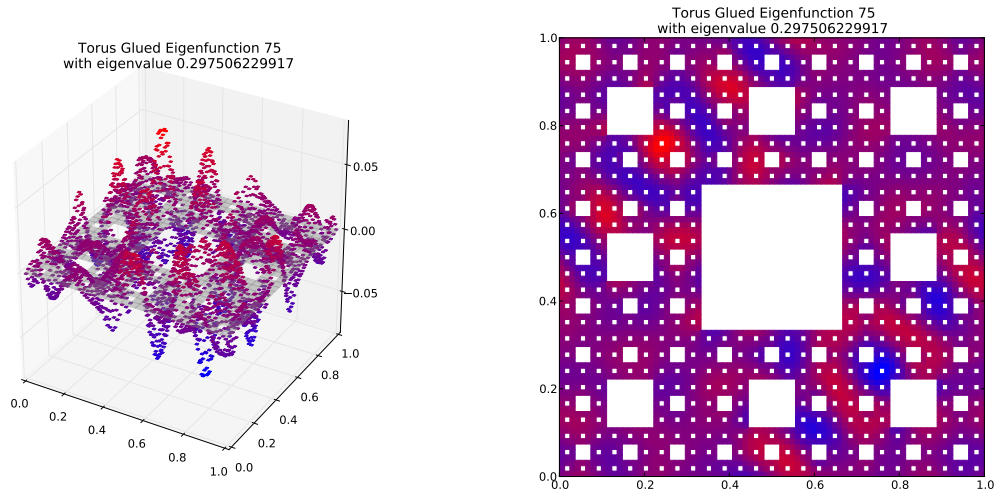
Compare to  $m = 3$  eigenspace with eigenvalue 1.71949100007  
(Note: Eigenspace Dimension  $> 1$ )



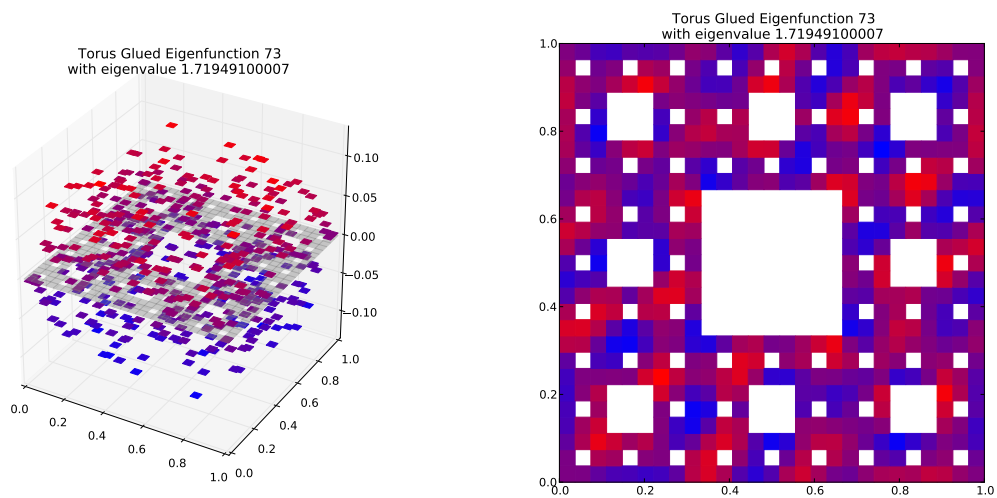
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.173019940148$   
Dot Value: 0.40087366870868213

## 76 $M = 4$ Eigenfunction 75

$M = 4$  Eigenfunction 75 has eigenvalue 0.297506229917



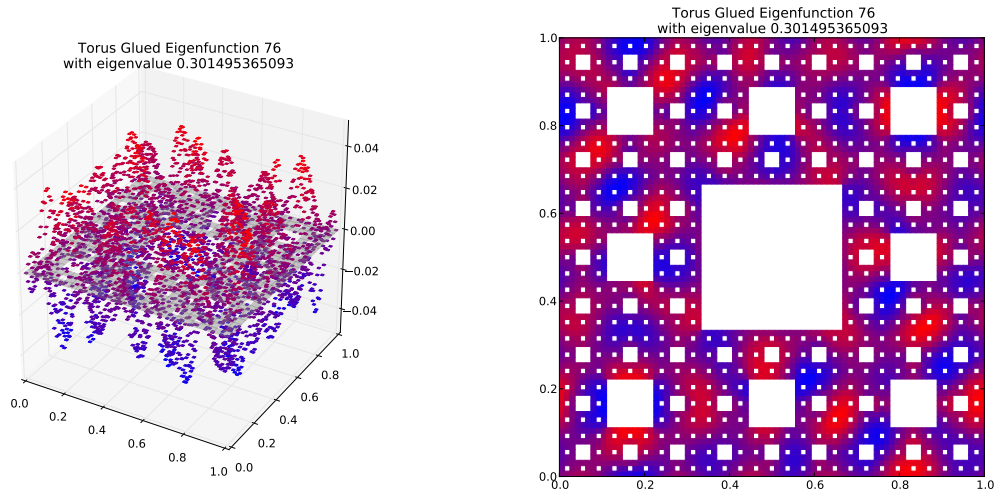
Compare to  $m = 3$  eigenspace with eigenvalue 1.71949100007  
(Note: Eigenspace Dimension  $> 1$ )



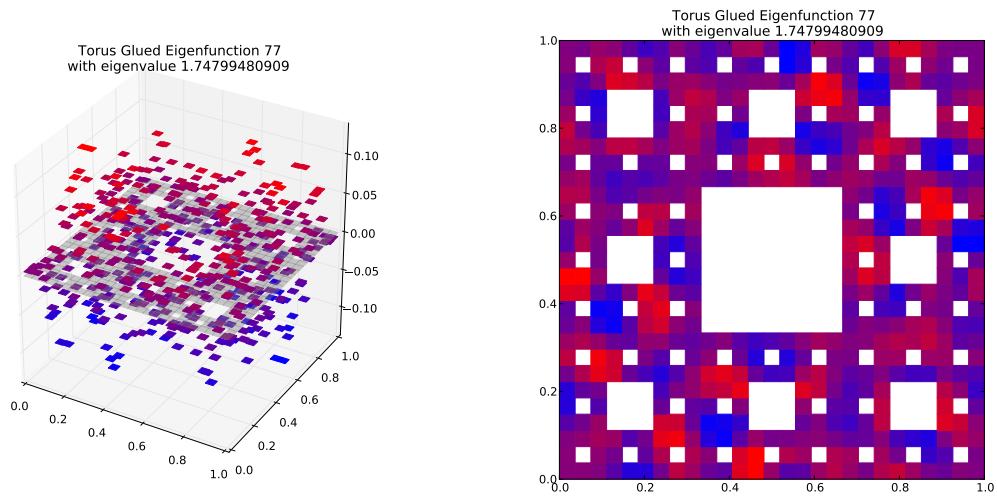
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.173019940148$   
Dot Value: 0.40087366870855357

## 77 $M = 4$ Eigenfunction 76

$M = 4$  Eigenfunction 76 has eigenvalue 0.301495365093



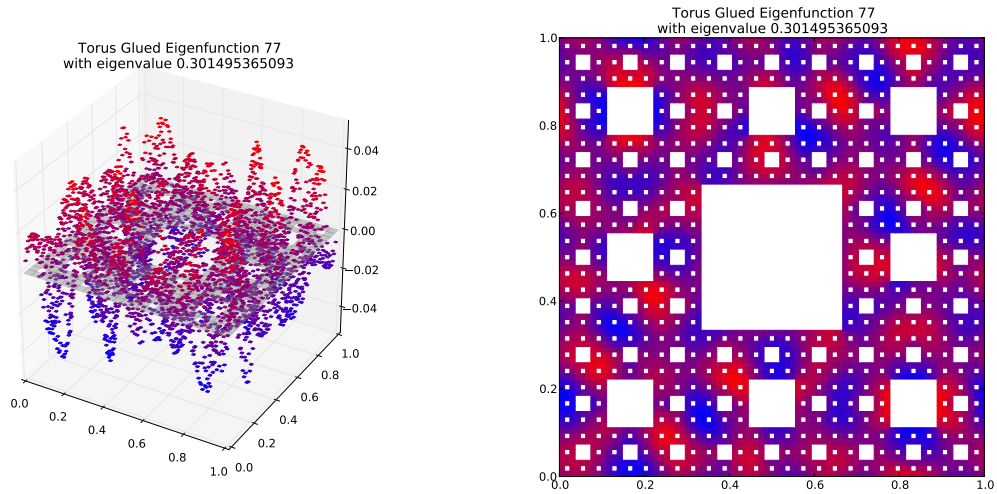
Compare to  $m = 3$  eigenspace with eigenvalue 1.74799480909  
(Note: Eigenspace Dimension  $> 1$ )



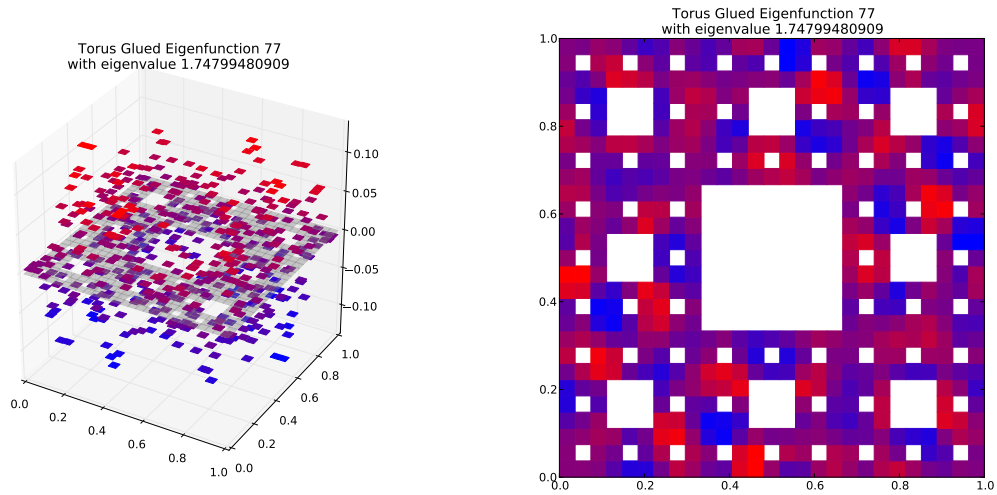
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.172480698183$   
Dot Value: 0.1755794228131794

## 78 $M = 4$ Eigenfunction 77

$M = 4$  Eigenfunction 77 has eigenvalue 0.301495365093



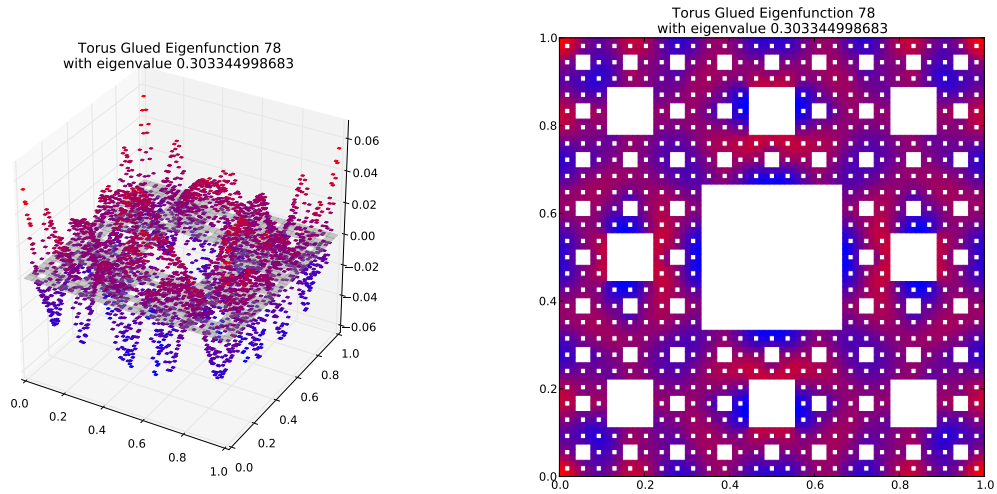
Compare to  $m = 3$  eigenspace with eigenvalue 1.74799480909  
(Note: Eigenspace Dimension  $> 1$ )



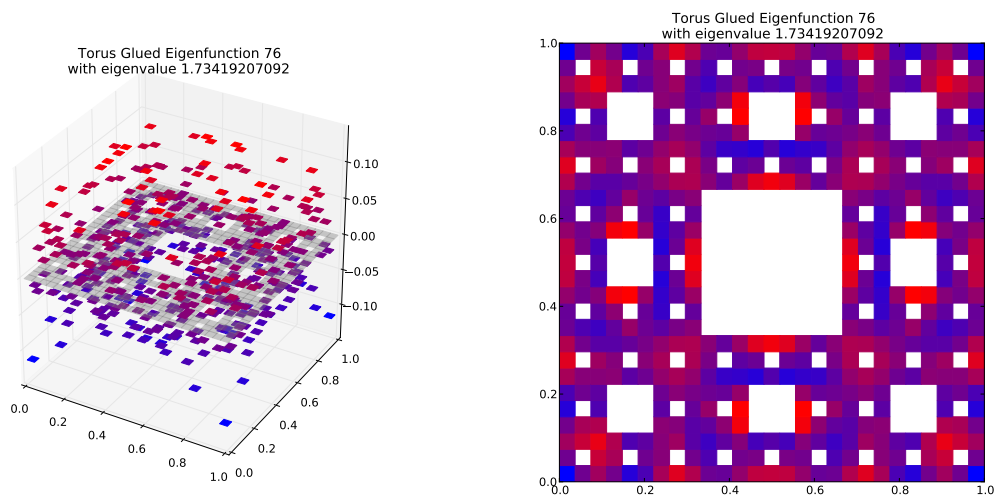
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.172480698183$   
Dot Value: 0.17557942281317818

## 79 $M = 4$ Eigenfunction 78

$M = 4$  Eigenfunction 78 has eigenvalue 0.303344998683



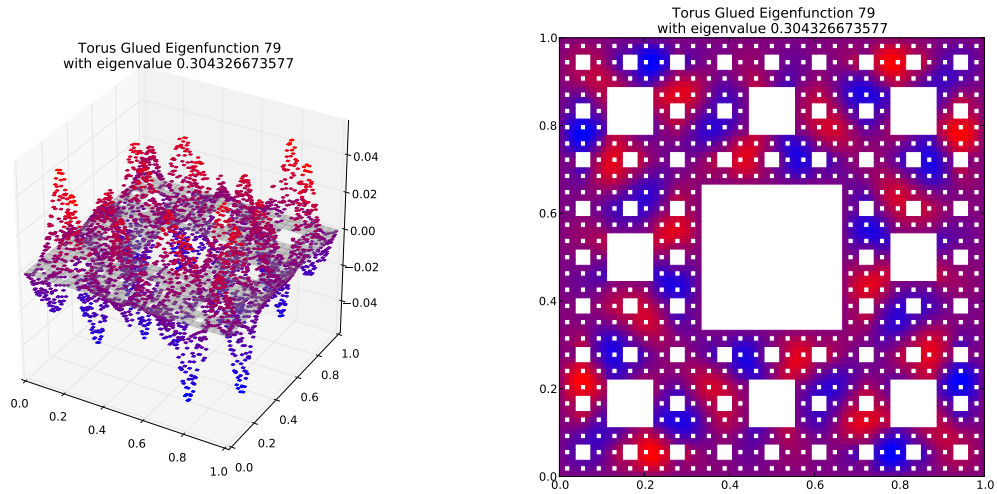
Compare to  $m = 3$  eigenspace with eigenvalue 1.73419207092



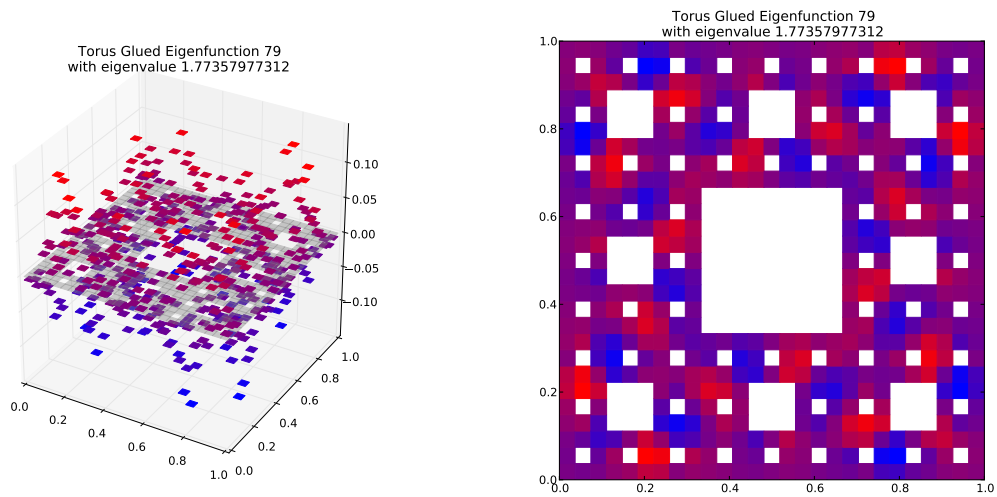
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.174920070141$   
Dot Value: 0.014606885812900705

## 80 $M = 4$ Eigenfunction 79

$M = 4$  Eigenfunction 79 has eigenvalue 0.304326673577



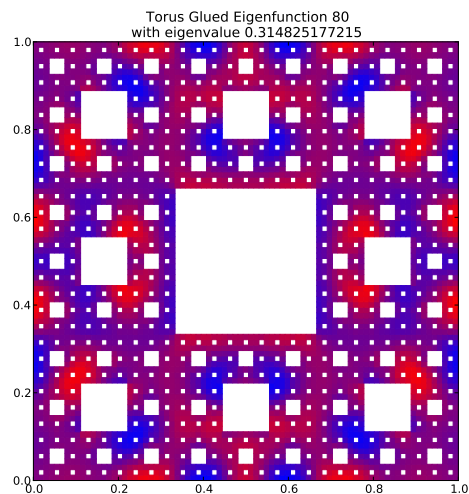
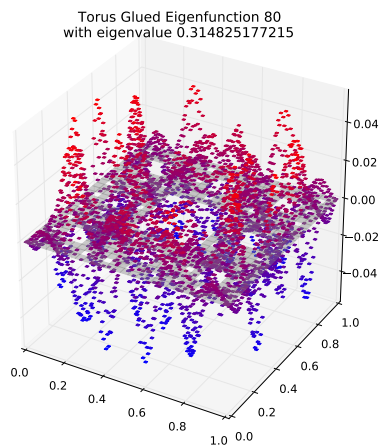
Compare to  $m = 3$  eigenspace with eigenvalue 1.77357977312



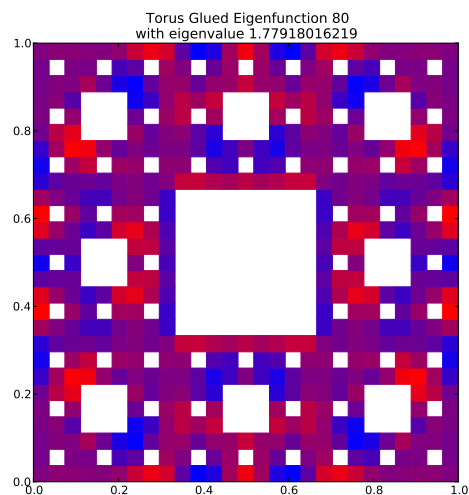
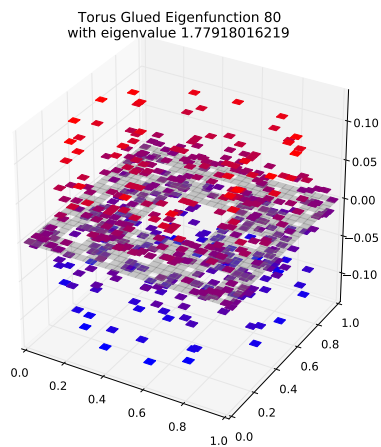
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.17158894017$   
Dot Value: 0.01842155445785194

# 81 $M = 4$ Eigenfunction 80

$M = 4$  Eigenfunction 80 has eigenvalue 0.314825177215



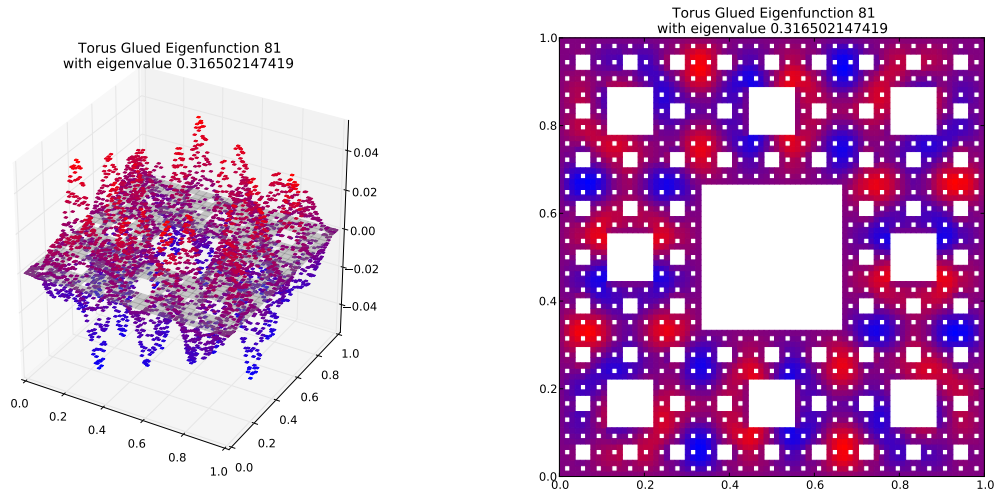
Compare to  $m = 3$  eigenspace with eigenvalue 1.77918016219



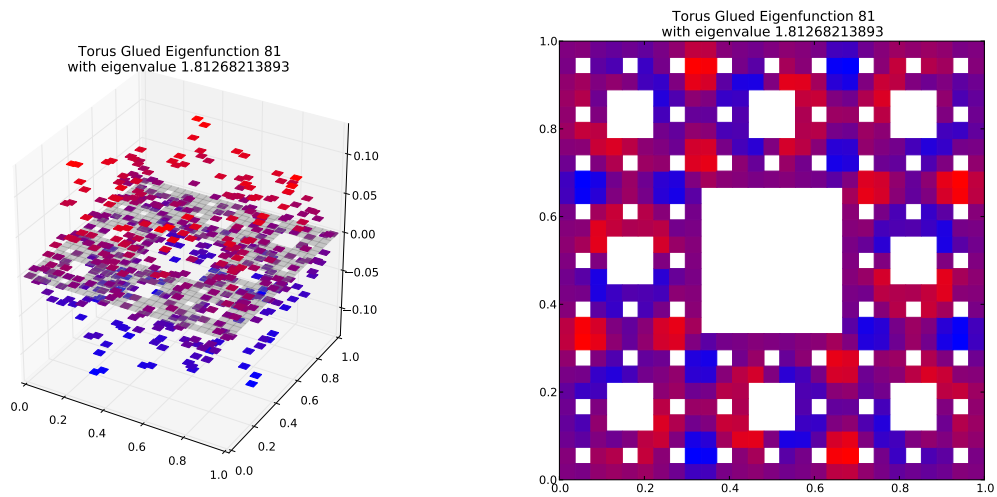
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.176949577061$   
Dot Value: 0.03398798341484888

## 82 $M = 4$ Eigenfunction 81

$M = 4$  Eigenfunction 81 has eigenvalue 0.316502147419



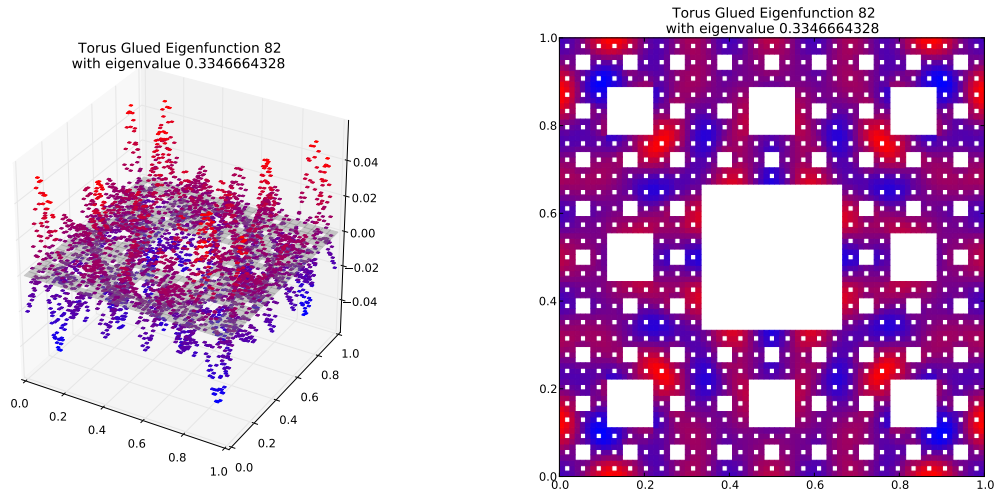
Compare to  $m = 3$  eigenspace with eigenvalue 1.81268213893



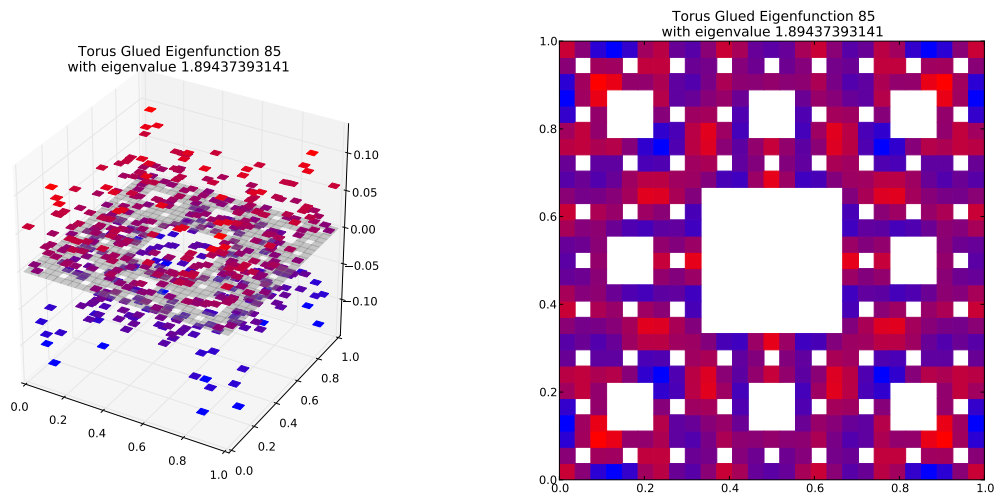
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.174604328372$   
Dot Value: 0.023993629030108155

### 83 $M = 4$ Eigenfunction 82

$M = 4$  Eigenfunction 82 has eigenvalue 0.3346664328



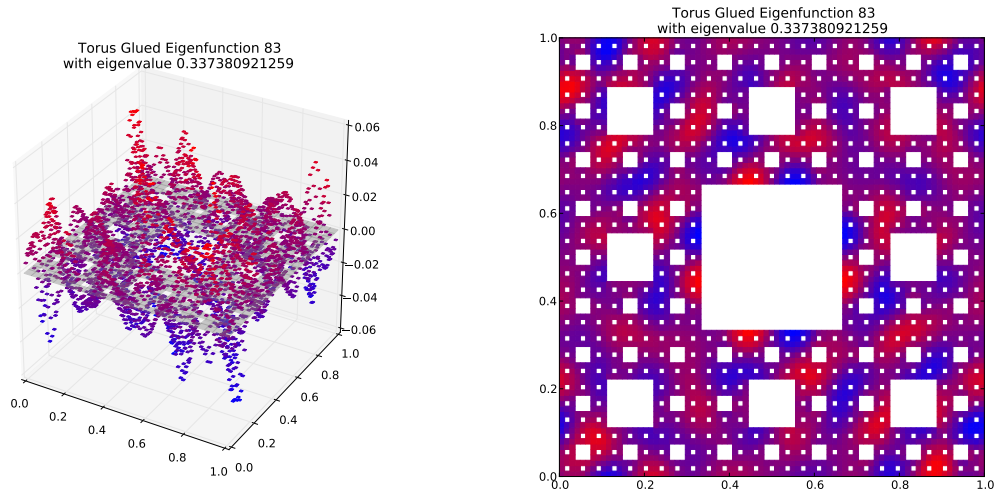
Compare to  $m = 3$  eigenspace with eigenvalue 1.89437393141



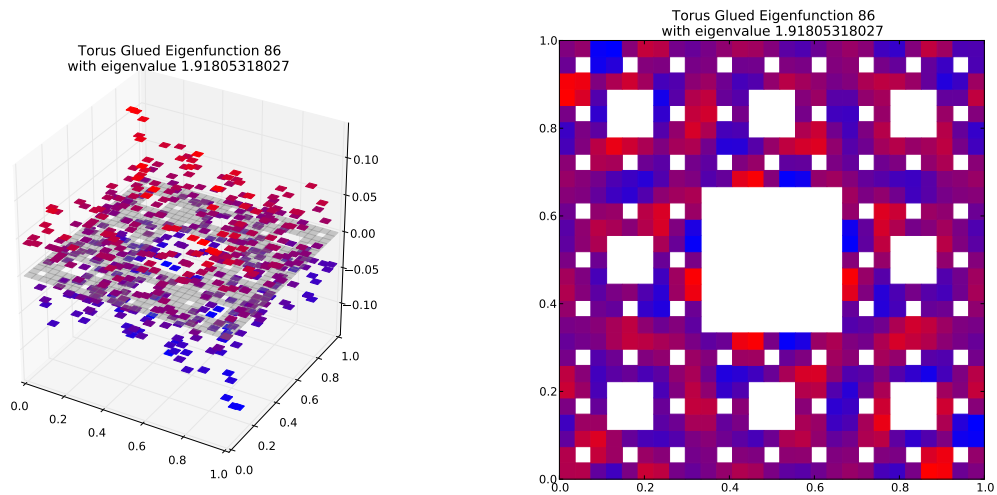
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.176663343625$   
Dot Value: 0.01801189237403067

## 84 $M = 4$ Eigenfunction 83

$M = 4$  Eigenfunction 83 has eigenvalue 0.337380921259



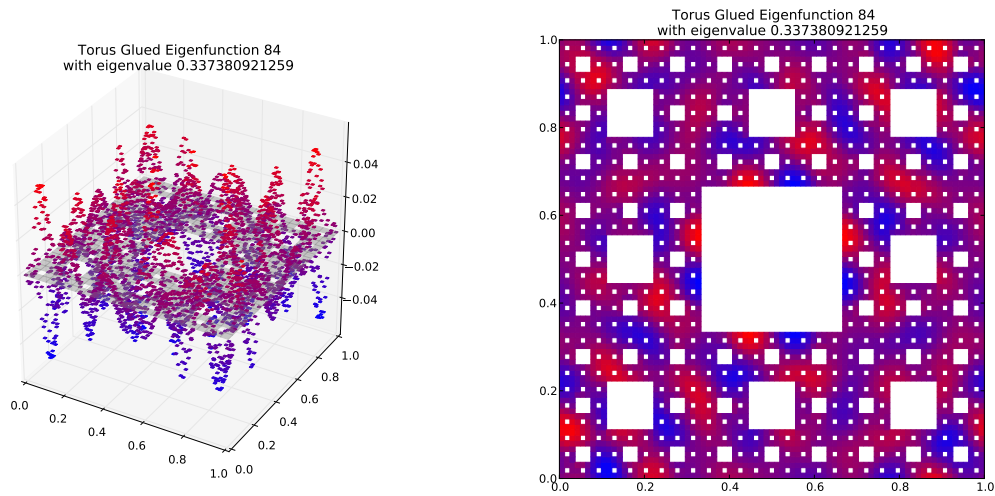
Compare to  $m = 3$  eigenspace with eigenvalue 1.91805318027  
(Note: Eigenspace Dimension  $> 1$ )



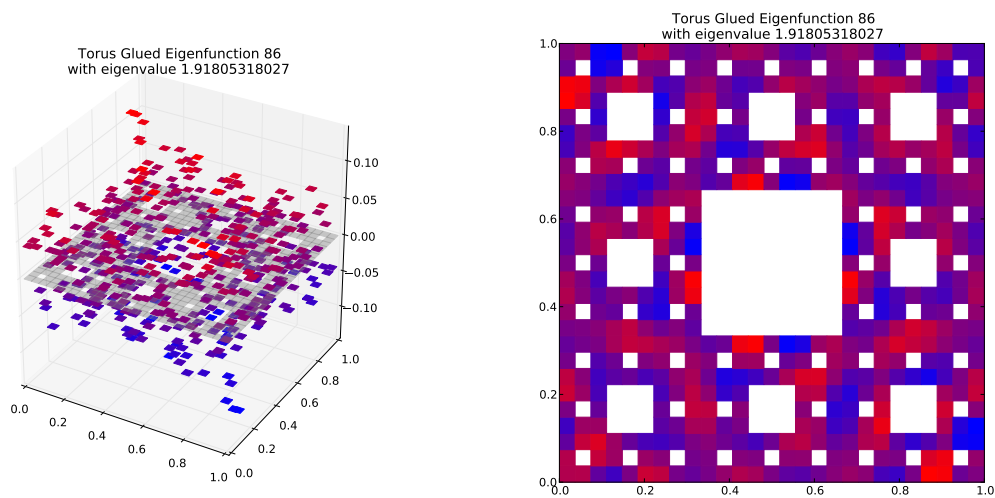
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.175897584452$   
Dot Value: 0.0408677687523159

## 85 $M = 4$ Eigenfunction 84

$M = 4$  Eigenfunction 84 has eigenvalue 0.337380921259



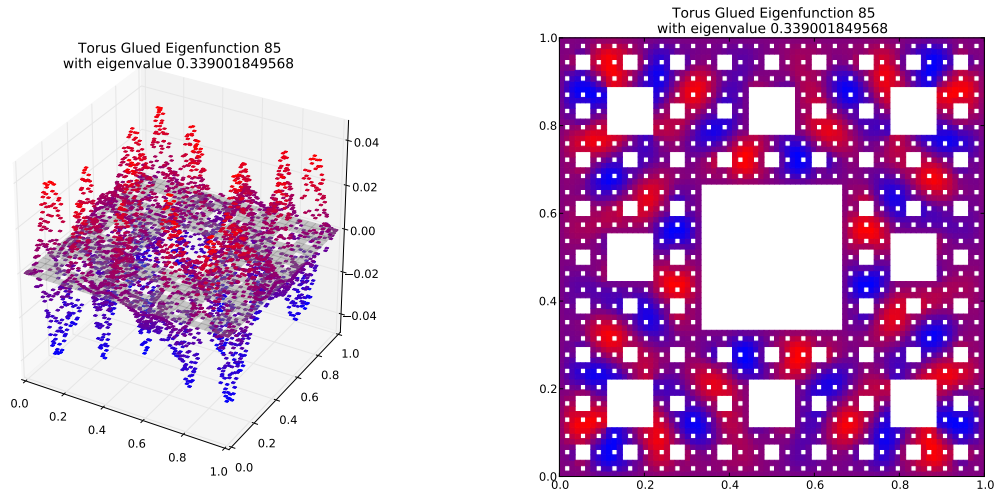
Compare to  $m = 3$  eigenspace with eigenvalue 1.91805318027  
(Note: Eigenspace Dimension  $> 1$ )



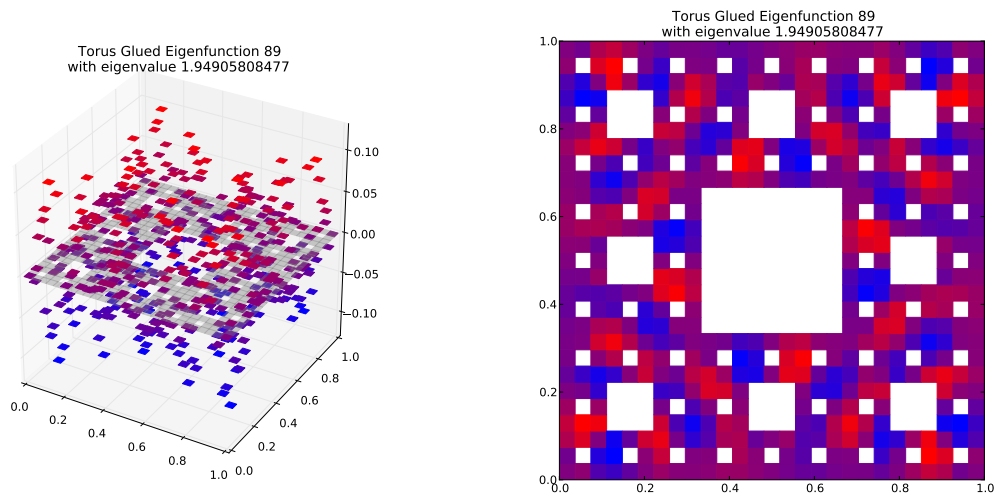
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.175897584452$   
Dot Value: 0.04086776875231157

## 86 $M = 4$ Eigenfunction 85

$M = 4$  Eigenfunction 85 has eigenvalue 0.339001849568



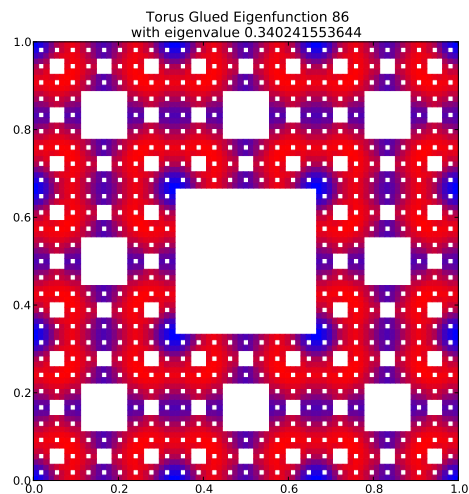
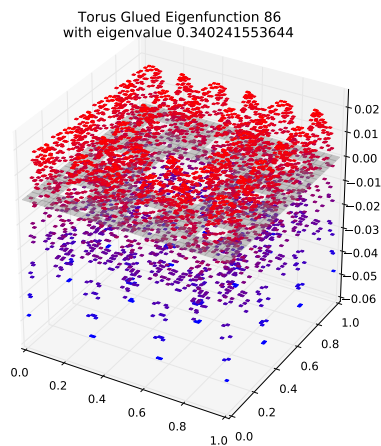
Compare to  $m = 3$  eigenspace with eigenvalue 1.94905808477



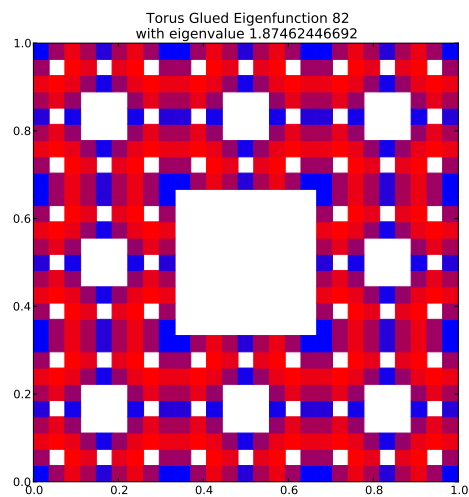
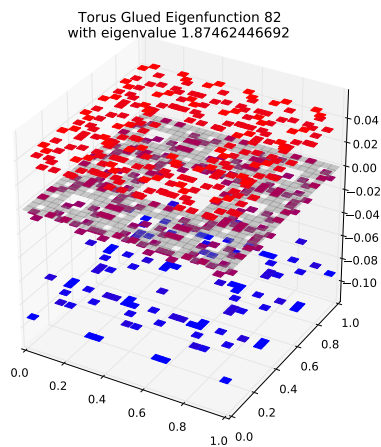
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.17393111689$   
Dot Value: 0.020764783038973555

## 87 $M = 4$ Eigenfunction 86

$M = 4$  Eigenfunction 86 has eigenvalue 0.340241553644



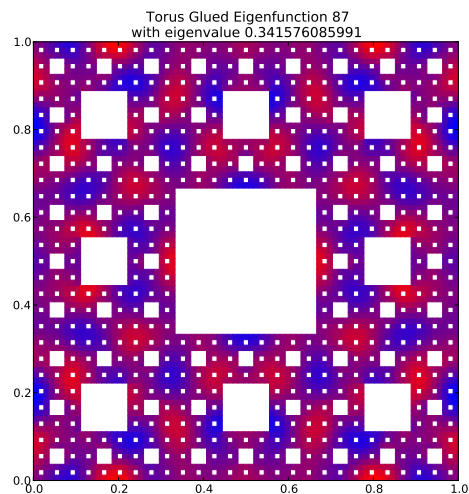
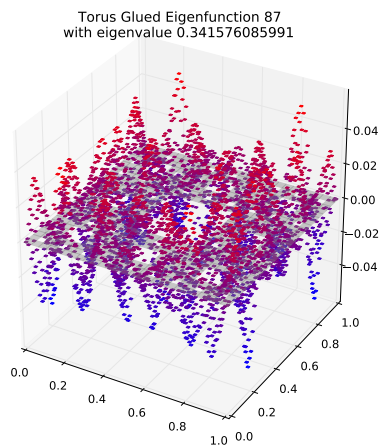
Compare to  $m = 3$  eigenspace with eigenvalue 1.87462446692



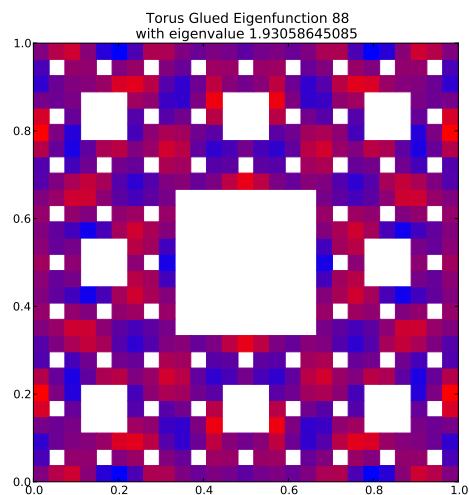
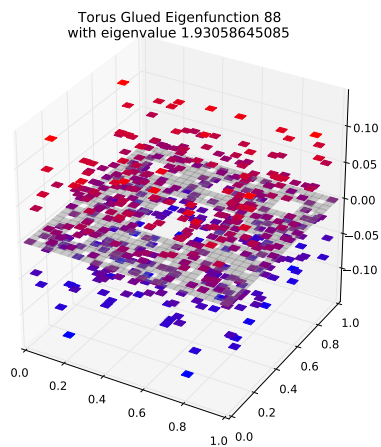
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.181498513247$   
Dot Value: 0.01748962532888232

## 88 $M = 4$ Eigenfunction 87

$M = 4$  Eigenfunction 87 has eigenvalue 0.341576085991



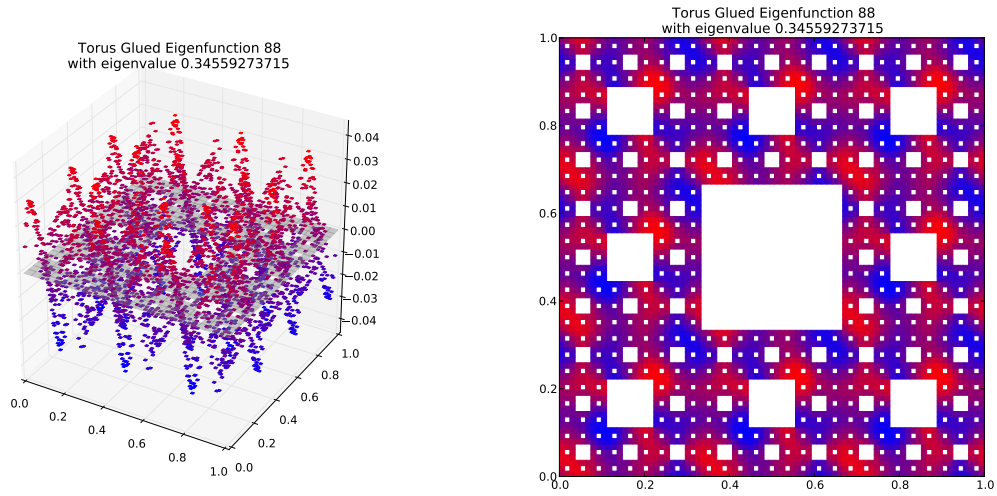
Compare to  $m = 3$  eigenspace with eigenvalue 1.93058645085



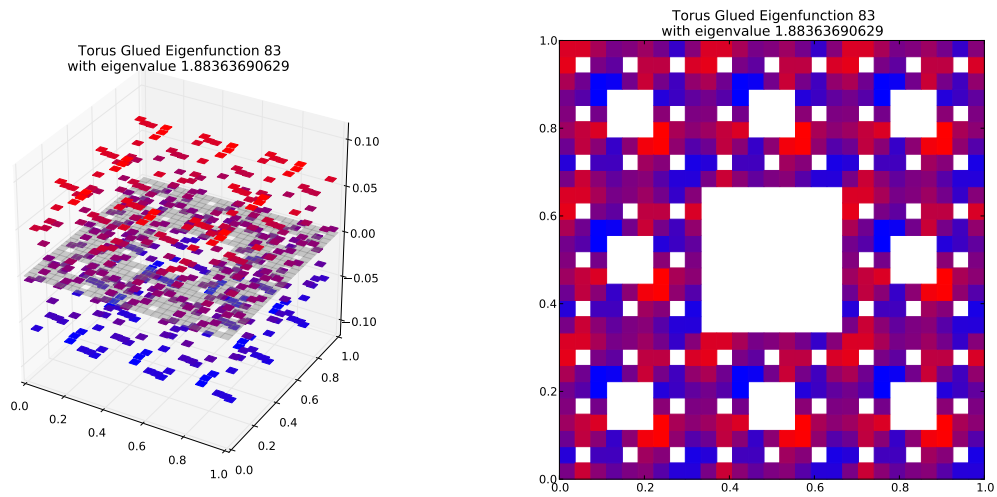
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.176928666334$   
Dot Value: 0.01600569087584347

## 89 $M = 4$ Eigenfunction 88

$M = 4$  Eigenfunction 88 has eigenvalue 0.34559273715



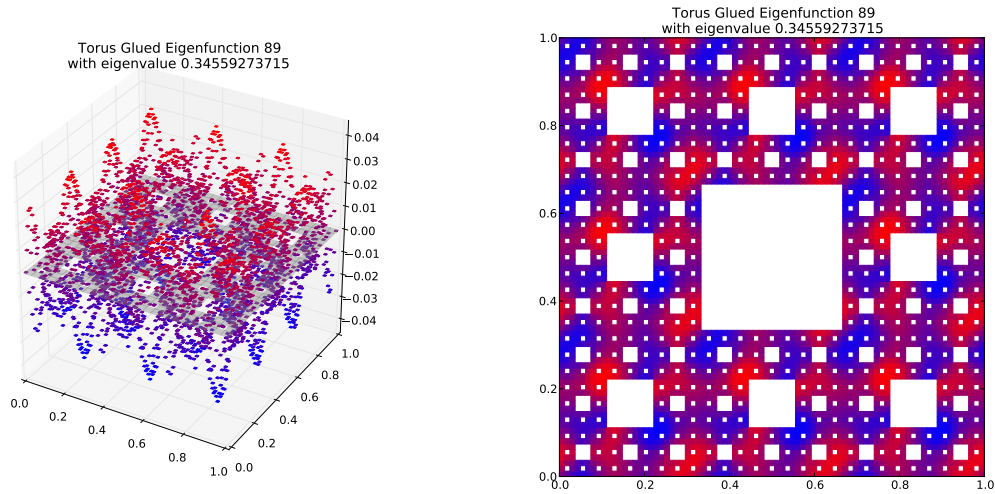
Compare to  $m = 3$  eigenspace with eigenvalue 1.88363690629  
(Note: Eigenspace Dimension  $> 1$ )



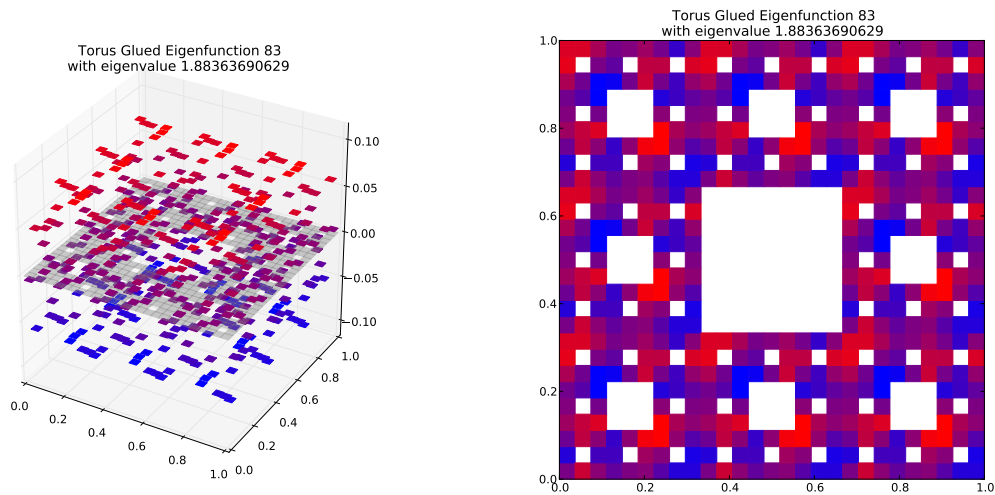
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183470994859$   
Dot Value: 0.007345580950168573

## 90 $M = 4$ Eigenfunction 89

$M = 4$  Eigenfunction 89 has eigenvalue 0.34559273715



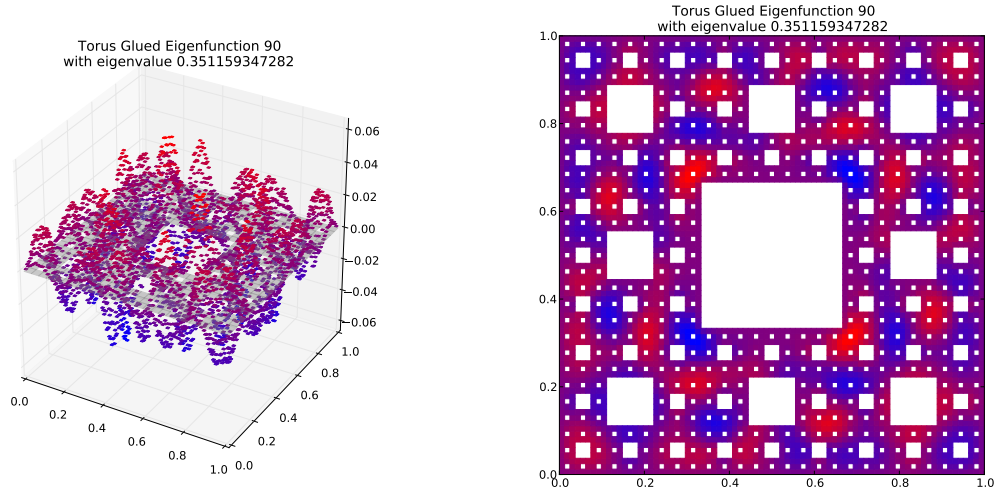
Compare to  $m = 3$  eigenspace with eigenvalue 1.88363690629  
(Note: Eigenspace Dimension  $> 1$ )



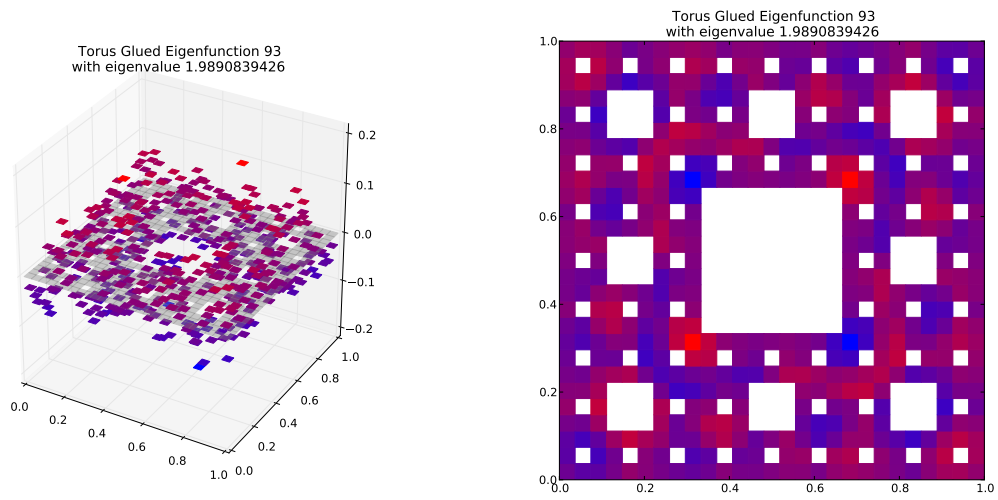
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183470994859$   
Dot Value: 0.007345580950168795

# 91 $M = 4$ Eigenfunction 90

$M = 4$  Eigenfunction 90 has eigenvalue 0.351159347282



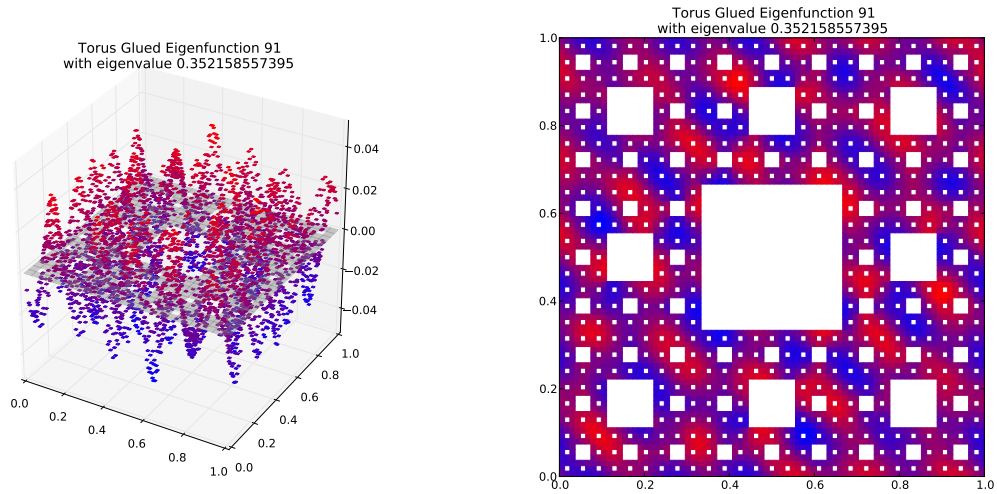
Compare to  $m = 3$  eigenspace with eigenvalue 1.9890839426



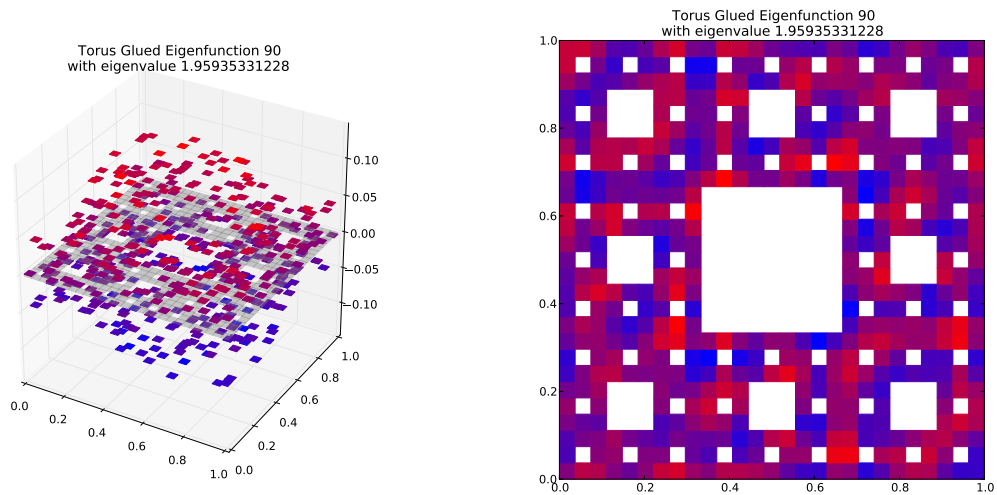
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.176543251775$   
Dot Value: 0.07244035855490527

## 92 $M = 4$ Eigenfunction 91

$M = 4$  Eigenfunction 91 has eigenvalue 0.352158557395



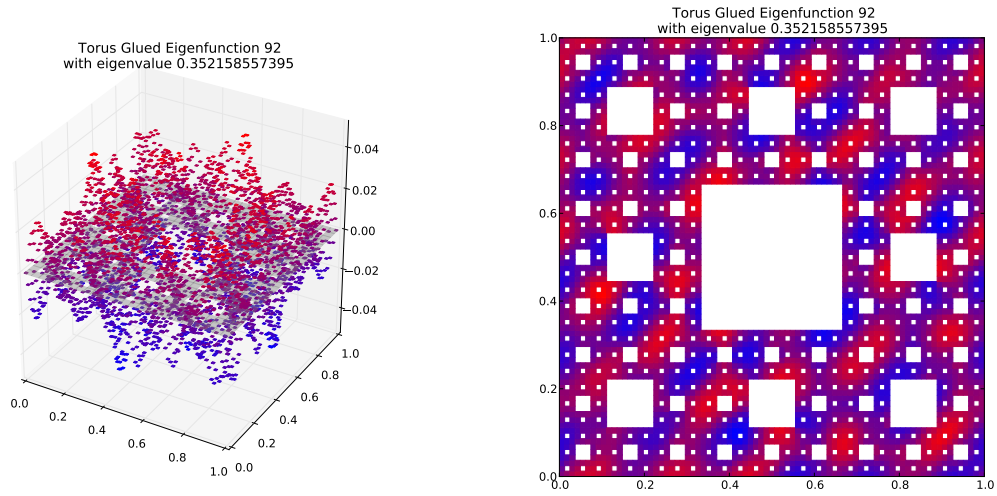
Compare to  $m = 3$  eigenspace with eigenvalue 1.95935331228  
(Note: Eigenspace Dimension  $> 1$ )



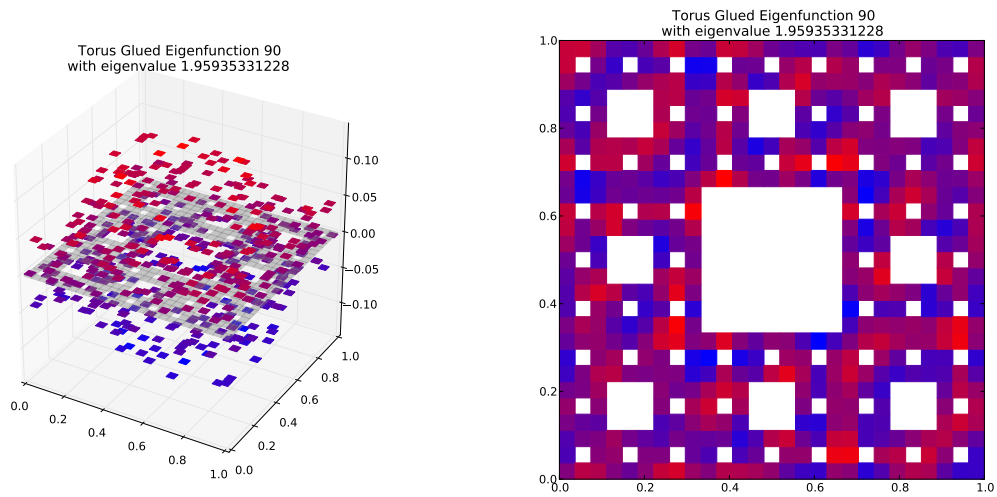
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.17973203464$   
Dot Value: 0.1303671000398161

### 93 $M = 4$ Eigenfunction 92

$M = 4$  Eigenfunction 92 has eigenvalue 0.352158557395



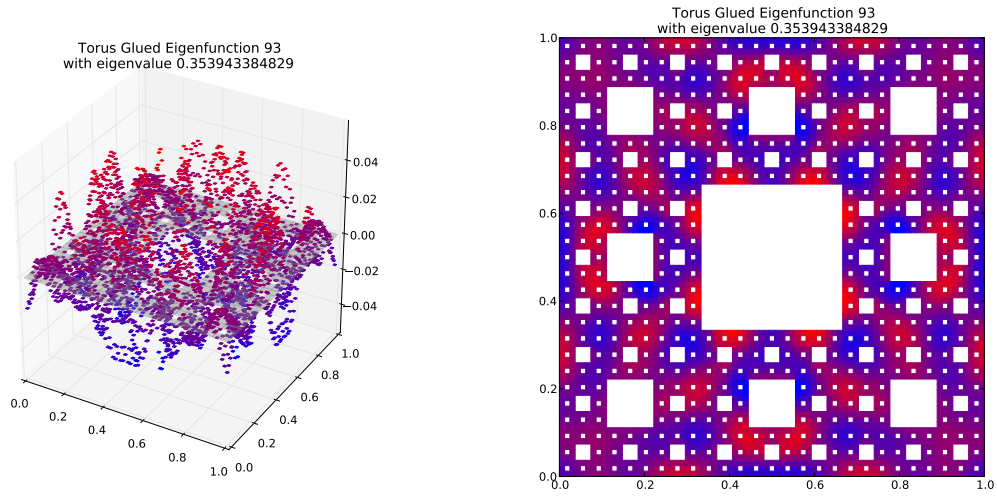
Compare to  $m = 3$  eigenspace with eigenvalue 1.95935331228  
(Note: Eigenspace Dimension  $> 1$ )



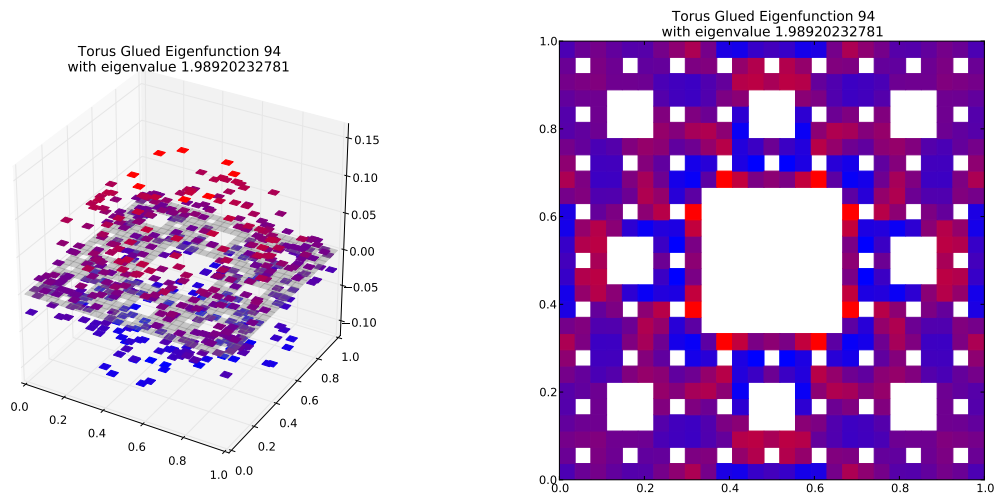
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.17973203464$   
Dot Value: 0.13036710003981544

## 94 $M = 4$ Eigenfunction 93

$M = 4$  Eigenfunction 93 has eigenvalue 0.353943384829



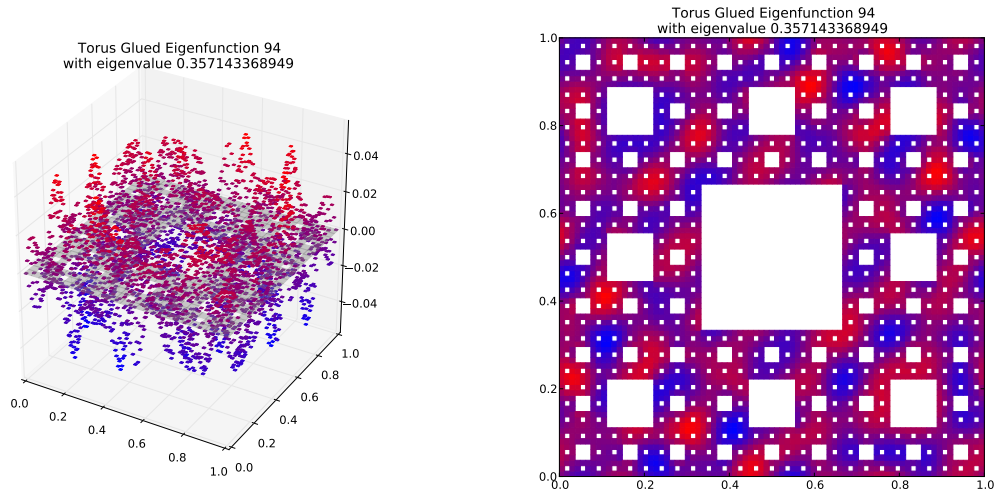
Compare to  $m = 3$  eigenspace with eigenvalue 1.98920232781



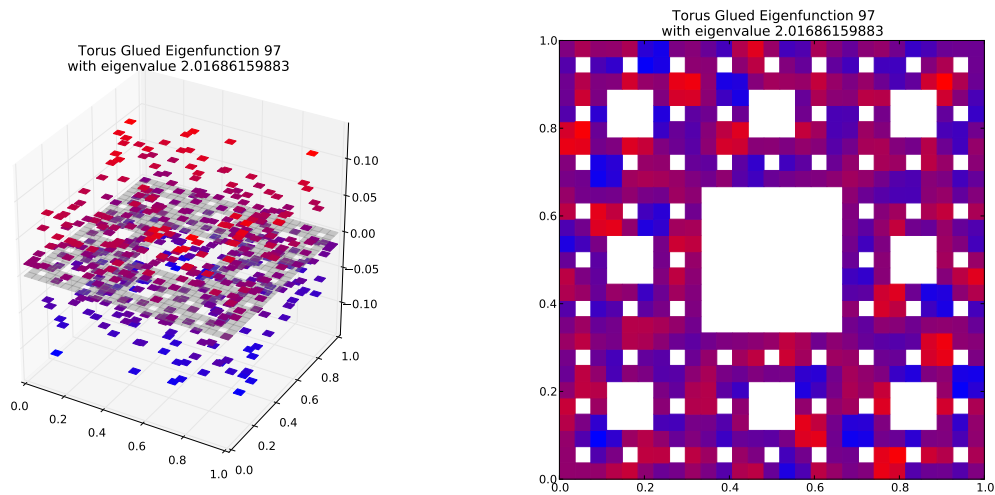
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.177932319845$   
Dot Value: 0.14227995833110207

## 95 $M = 4$ Eigenfunction 94

$M = 4$  Eigenfunction 94 has eigenvalue 0.357143368949



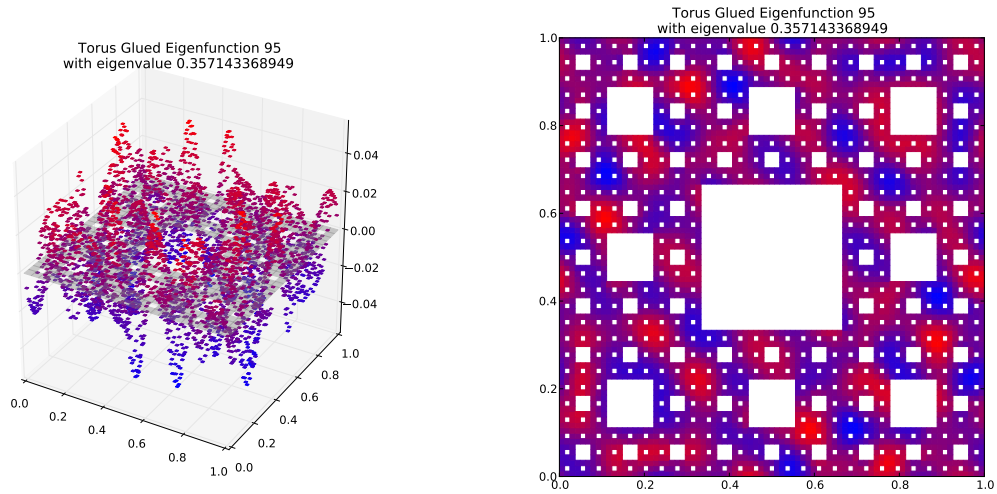
Compare to  $m = 3$  eigenspace with eigenvalue 2.01686159883  
(Note: Eigenspace Dimension  $> 1$ )



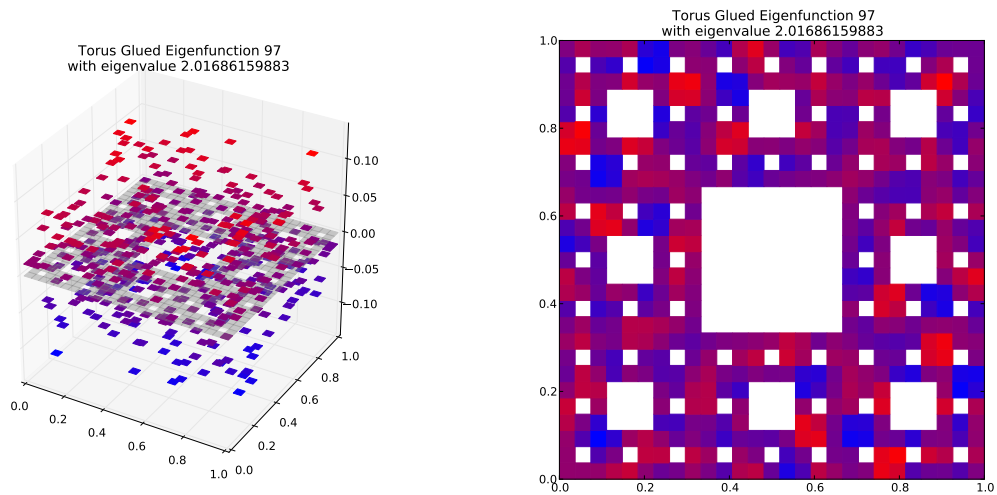
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.177078768893$   
Dot Value: 0.25876846299430833

## 96 $M = 4$ Eigenfunction 95

$M = 4$  Eigenfunction 95 has eigenvalue 0.357143368949



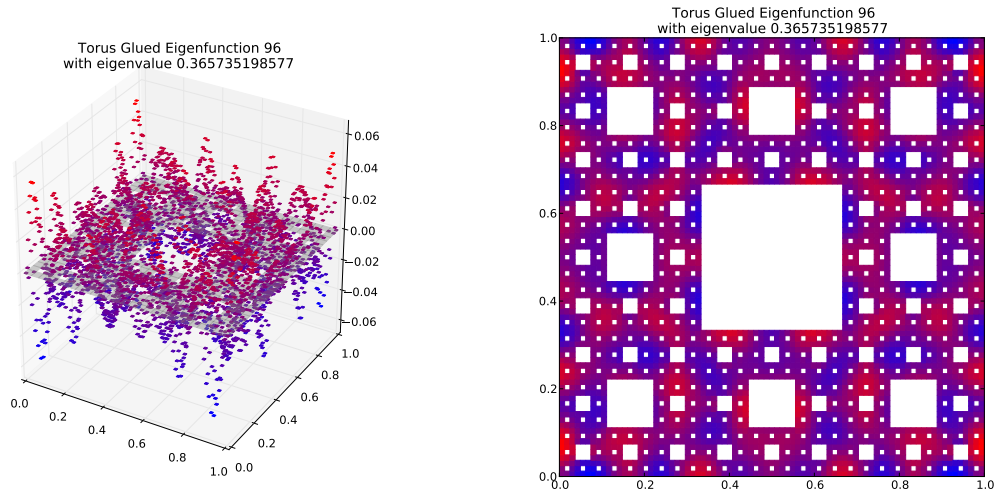
Compare to  $m = 3$  eigenspace with eigenvalue 2.01686159883  
(Note: Eigenspace Dimension  $> 1$ )



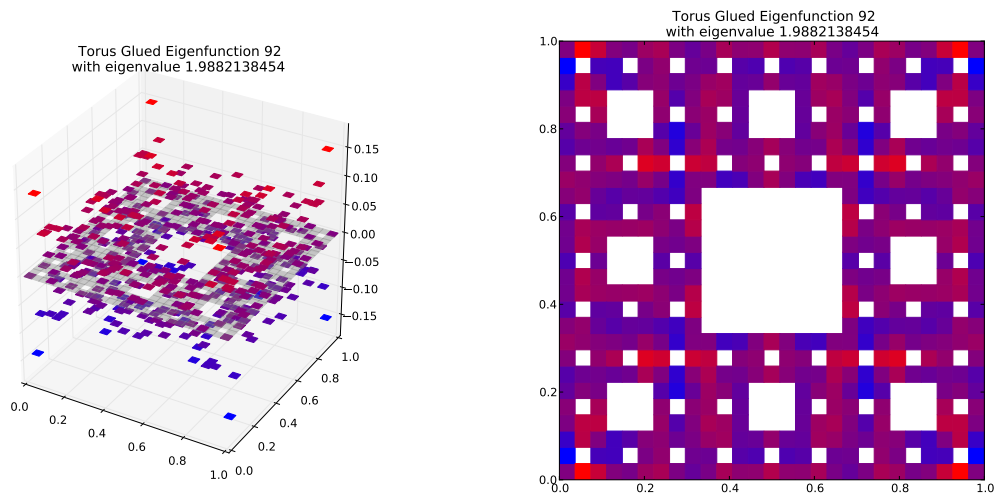
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.177078768893$   
Dot Value: 0.25876846299427614

## 97 $M = 4$ Eigenfunction 96

$M = 4$  Eigenfunction 96 has eigenvalue 0.365735198577



Compare to  $m = 3$  eigenspace with eigenvalue 1.9882138454

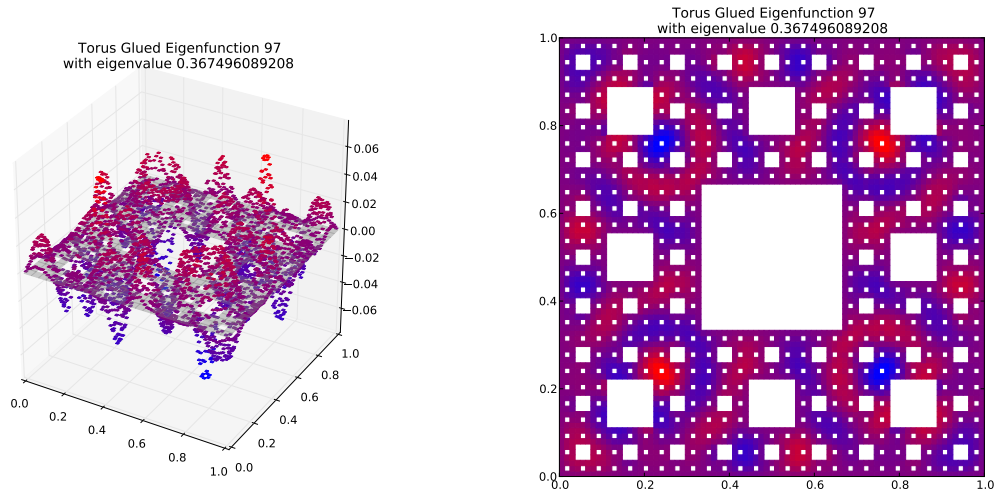


Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183951640525$

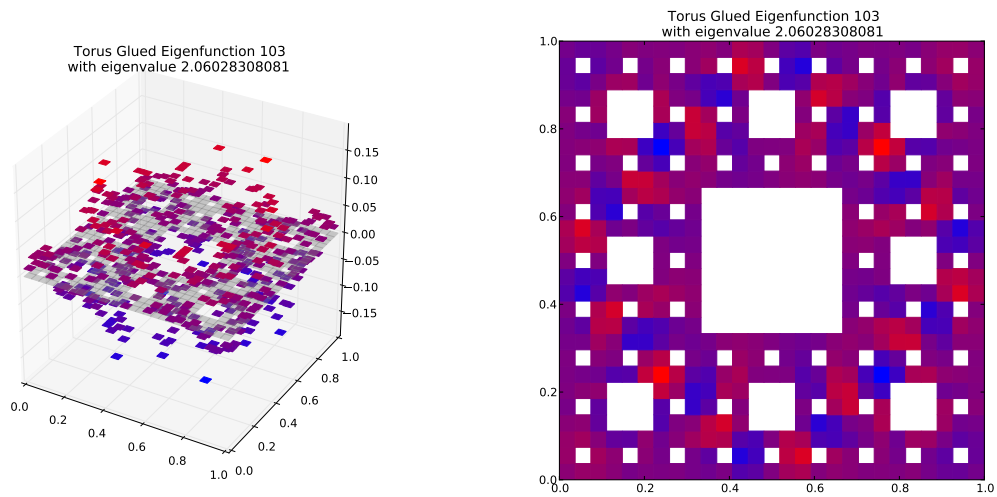
Dot Value: 0.1783091081995316

## 98 $M = 4$ Eigenfunction 97

$M = 4$  Eigenfunction 97 has eigenvalue 0.367496089208



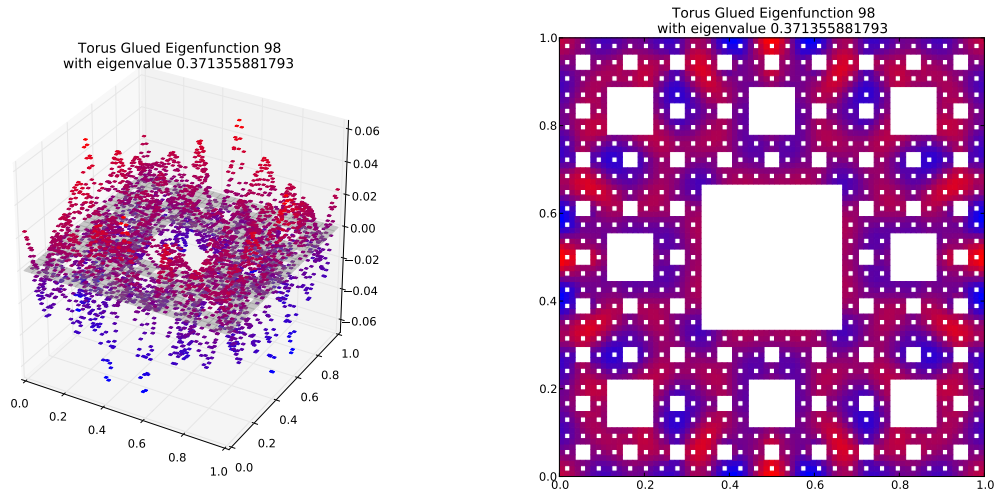
Compare to  $m = 3$  eigenspace with eigenvalue 2.06028308081



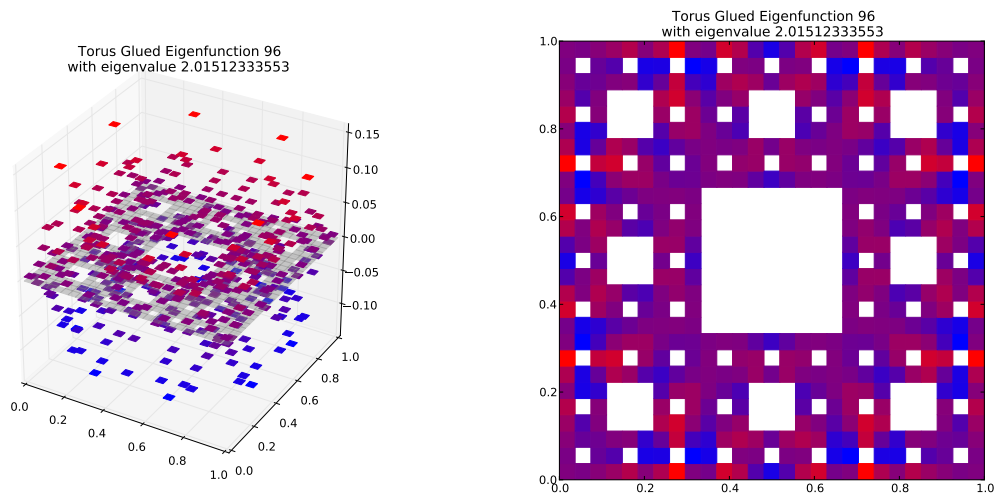
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.178371648357$   
Dot Value: 0.09997050688668674

## 99 $M = 4$ Eigenfunction 98

$M = 4$  Eigenfunction 98 has eigenvalue 0.371355881793



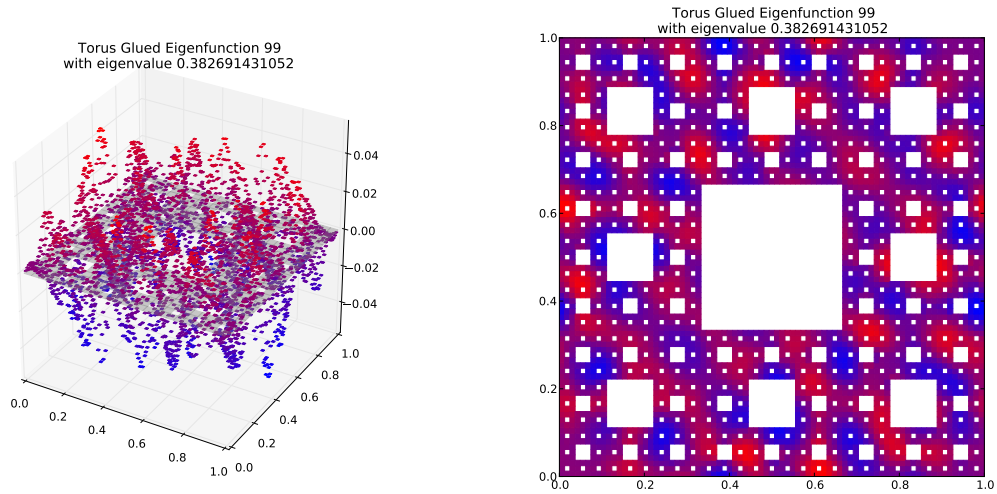
Compare to  $m = 3$  eigenspace with eigenvalue 2.01512333553



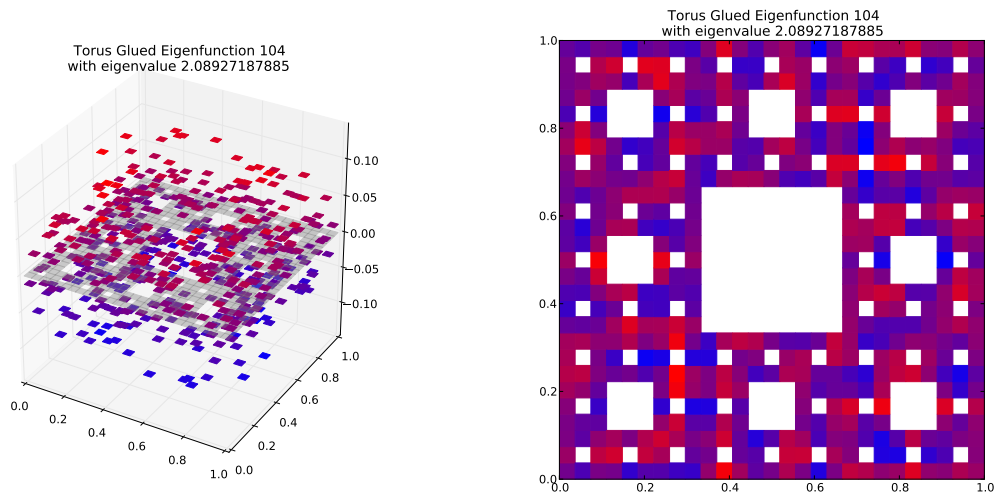
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.184284443164$   
Dot Value: 0.24274248574835278

# 100 $M = 4$ Eigenfunction 99

$M = 4$  Eigenfunction 99 has eigenvalue 0.382691431052



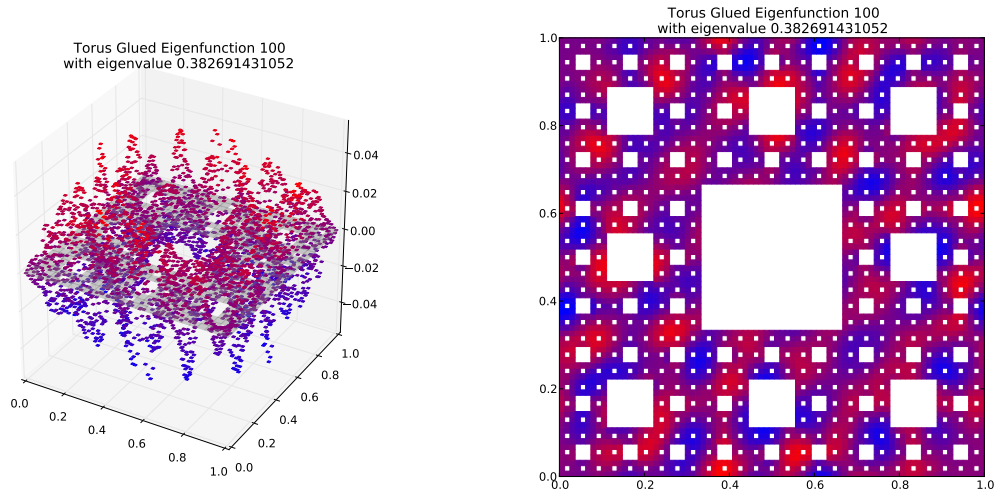
Compare to  $m = 3$  eigenspace with eigenvalue 2.08927187885  
(Note: Eigenspace Dimension  $> 1$ )



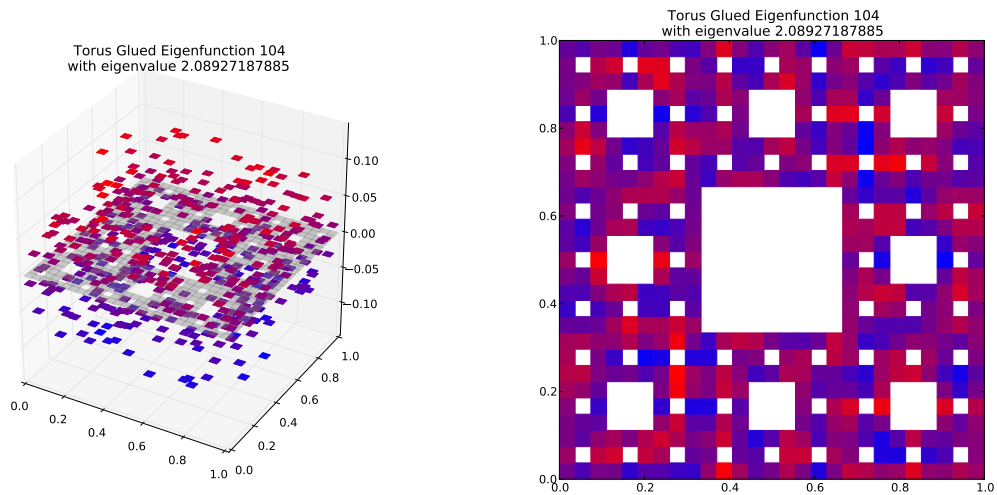
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183169761163$   
Dot Value: 0.29243949629006605

# 101 $M = 4$ Eigenfunction 100

$M = 4$  Eigenfunction 100 has eigenvalue 0.382691431052



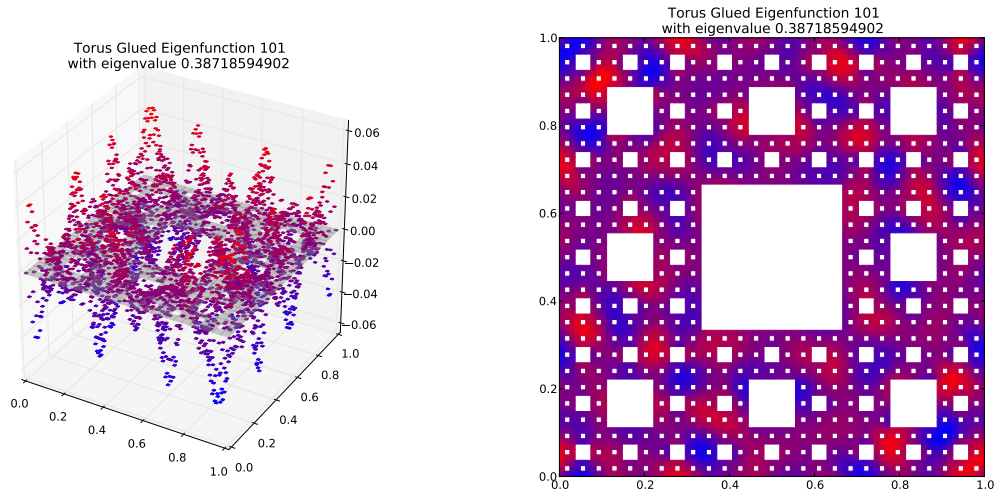
Compare to  $m = 3$  eigenspace with eigenvalue 2.08927187885  
(Note: Eigenspace Dimension  $> 1$ )



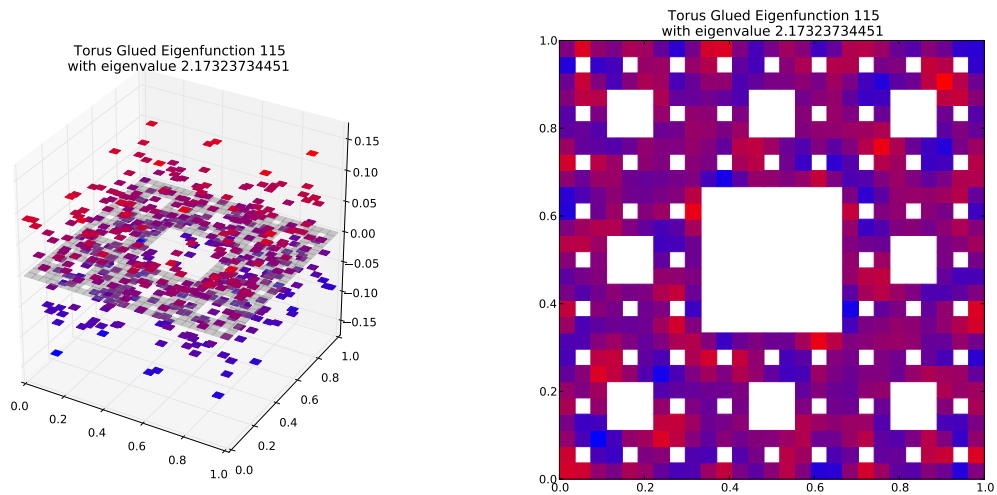
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183169761163$   
Dot Value: 0.2924394962900675

# 102 $M = 4$ Eigenfunction 101

$M = 4$  Eigenfunction 101 has eigenvalue 0.38718594902



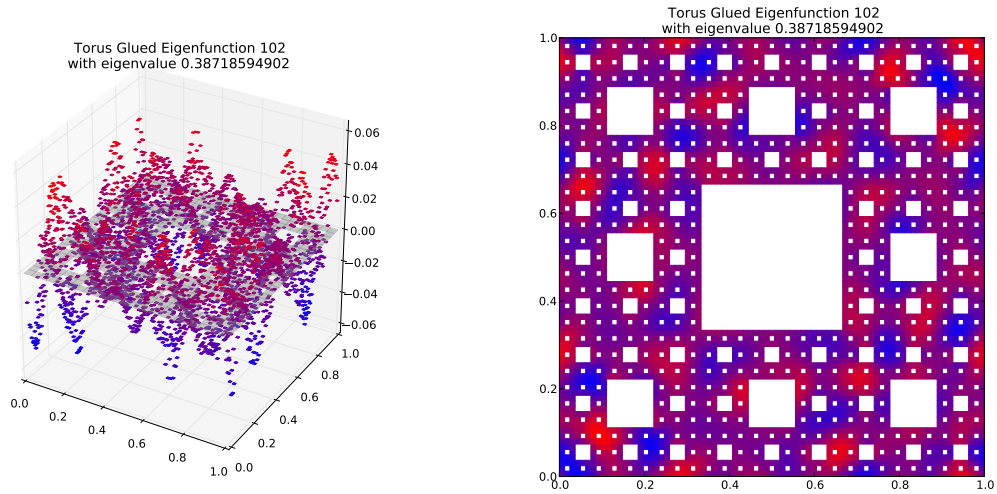
Compare to  $m = 3$  eigenspace with eigenvalue 2.17323734451  
(Note: Eigenspace Dimension  $> 1$ )



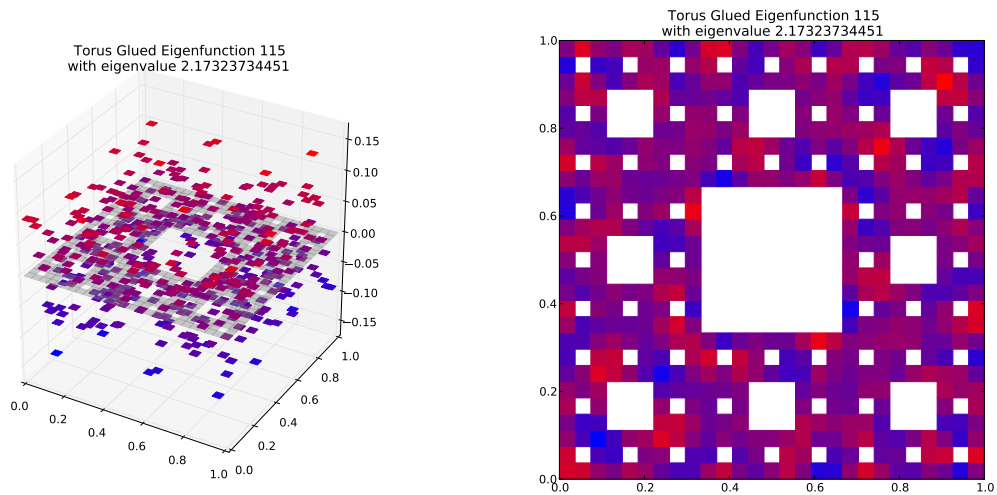
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.178160912795$   
Dot Value: 0.40748408490048227

# 103 $M = 4$ Eigenfunction 102

$M = 4$  Eigenfunction 102 has eigenvalue 0.38718594902



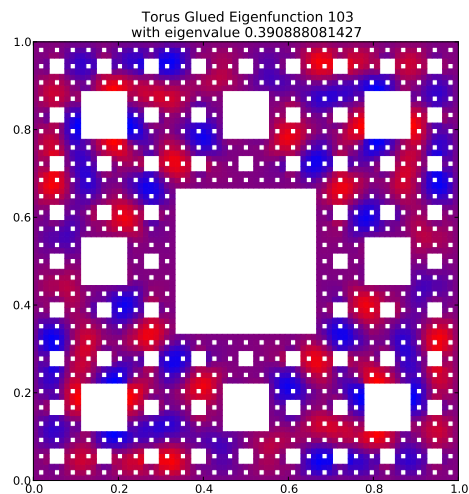
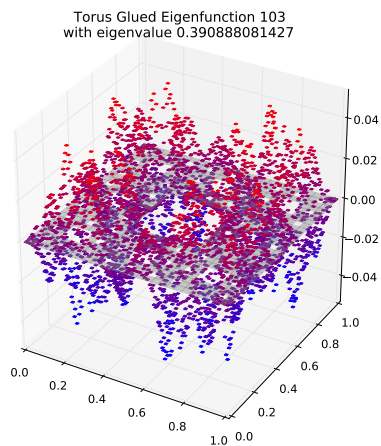
Compare to  $m = 3$  eigenspace with eigenvalue 2.17323734451  
(Note: Eigenspace Dimension  $> 1$ )



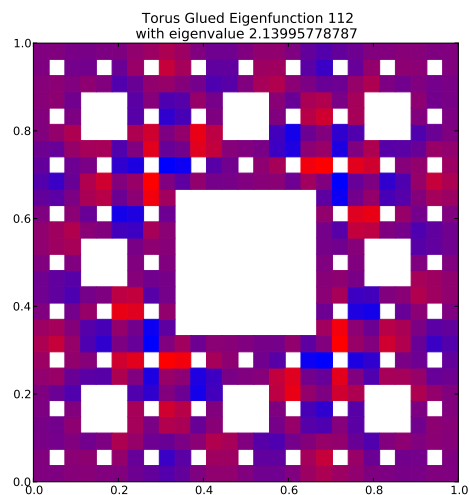
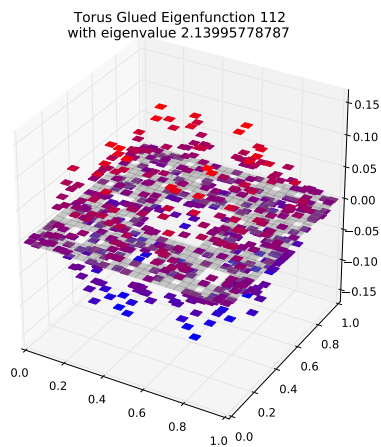
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.178160912795$   
Dot Value: 0.40748408490053634

# 104 $M = 4$ Eigenfunction 103

$M = 4$  Eigenfunction 103 has eigenvalue 0.390888081427



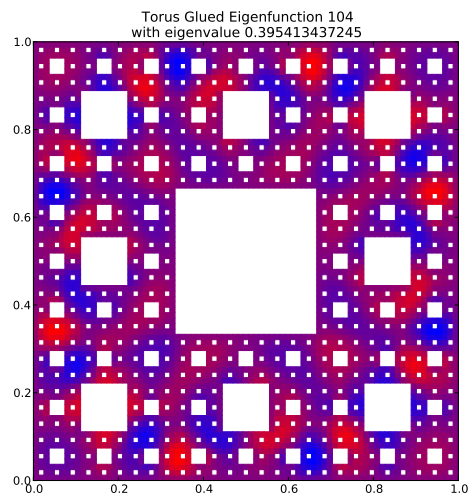
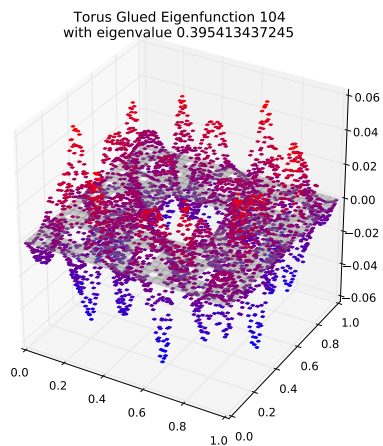
Compare to  $m = 3$  eigenspace with eigenvalue 2.13995778787



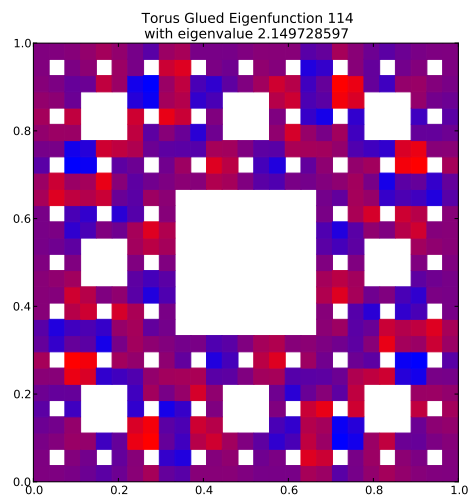
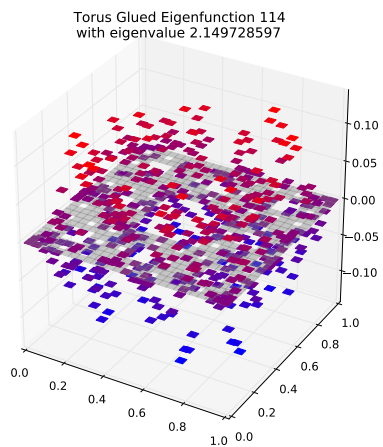
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.182661585029$   
Dot Value: 0.2997916342950224

# 105 $M = 4$ Eigenfunction 104

$M = 4$  Eigenfunction 104 has eigenvalue 0.395413437245



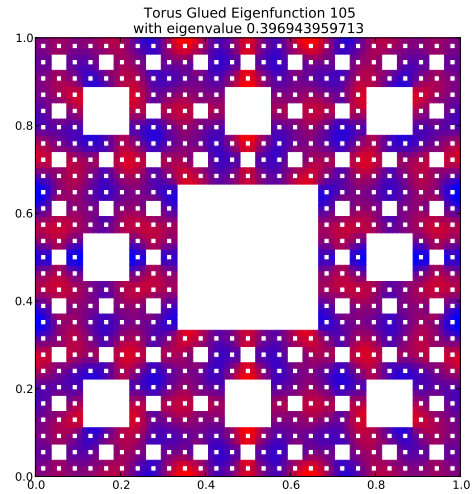
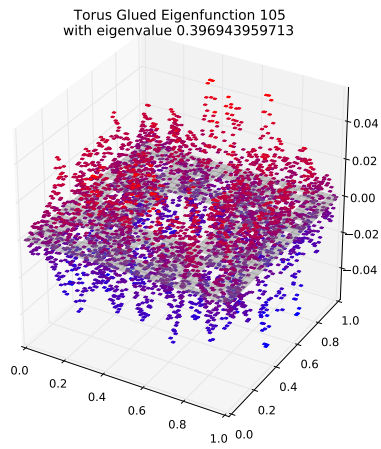
Compare to  $m = 3$  eigenspace with eigenvalue 2.149728597



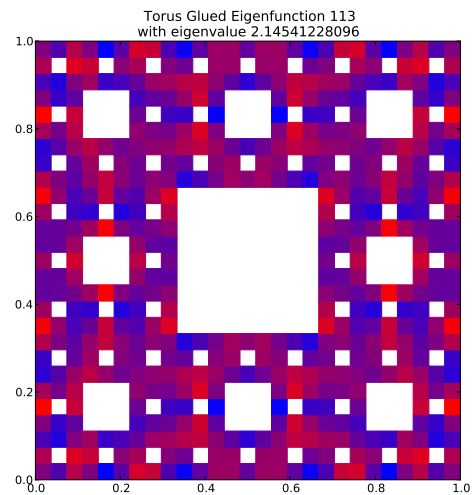
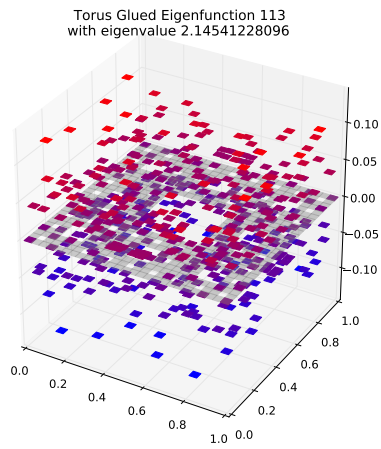
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.18393644565$   
Dot Value: 0.2503928934942673

# 106 $M = 4$ Eigenfunction 105

$M = 4$  Eigenfunction 105 has eigenvalue 0.396943959713



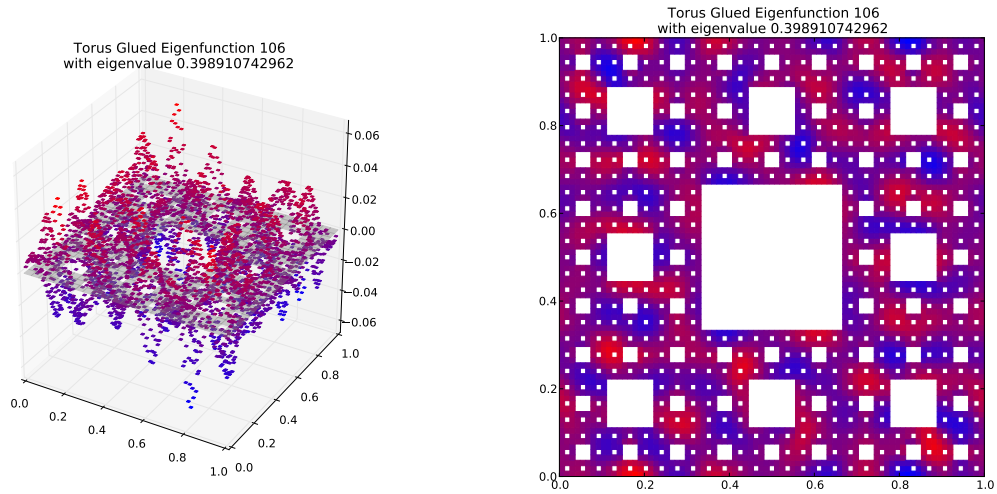
Compare to  $m = 3$  eigenspace with eigenvalue 2.14541228096



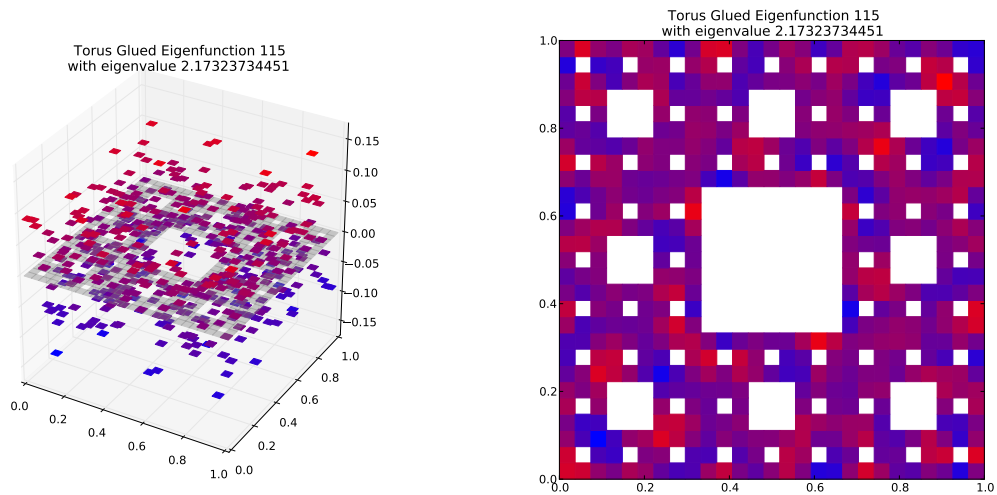
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.185019897218$   
Dot Value: 0.3588432236764312

# 107 $M = 4$ Eigenfunction 106

$M = 4$  Eigenfunction 106 has eigenvalue 0.398910742962



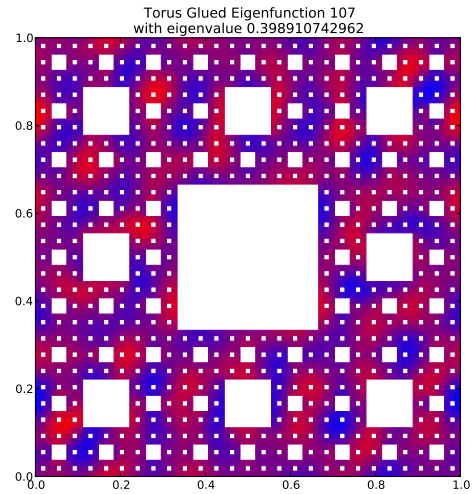
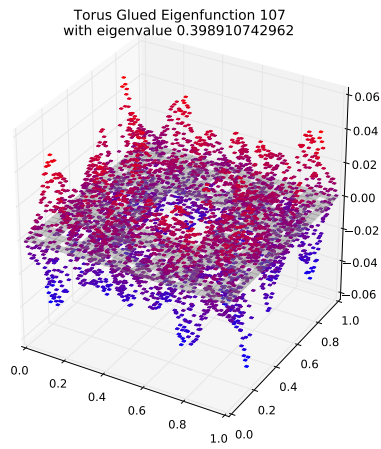
Compare to  $m = 3$  eigenspace with eigenvalue 2.17323734451  
(Note: Eigenspace Dimension  $> 1$ )



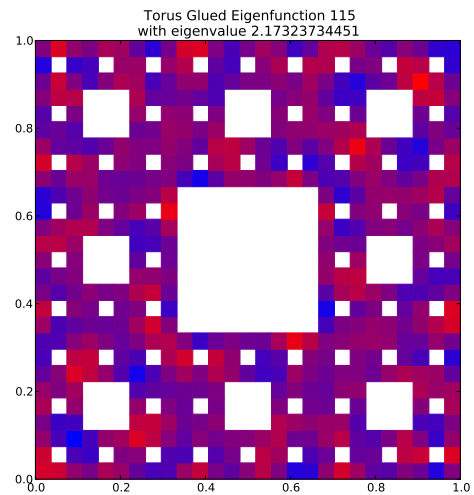
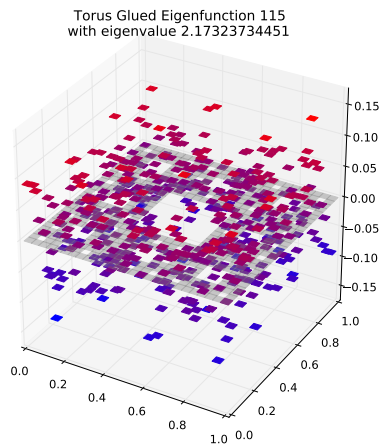
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183555994916$   
Dot Value: 0.37479963740263844

# 108 $M = 4$ Eigenfunction 107

$M = 4$  Eigenfunction 107 has eigenvalue 0.398910742962



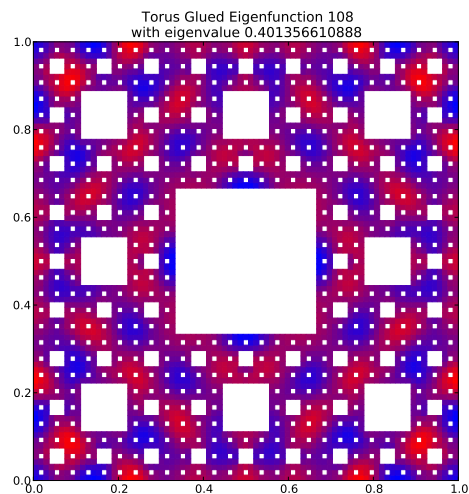
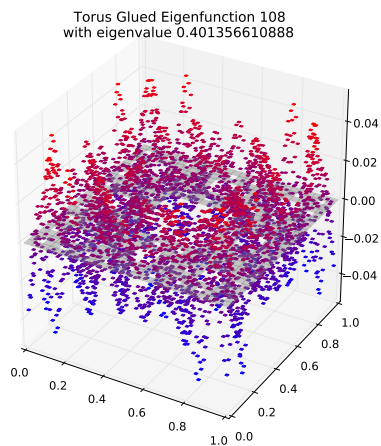
Compare to  $m = 3$  eigenspace with eigenvalue 2.17323734451  
(Note: Eigenspace Dimension  $> 1$ )



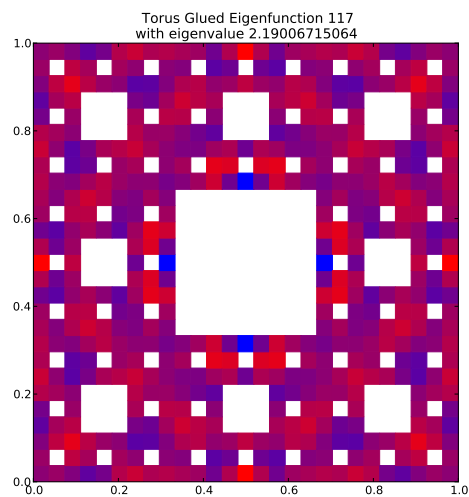
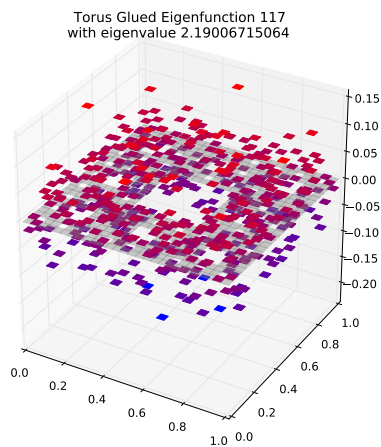
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183555994916$   
Dot Value: 0.3747996374027375

# 109 $M = 4$ Eigenfunction 108

$M = 4$  Eigenfunction 108 has eigenvalue 0.401356610888



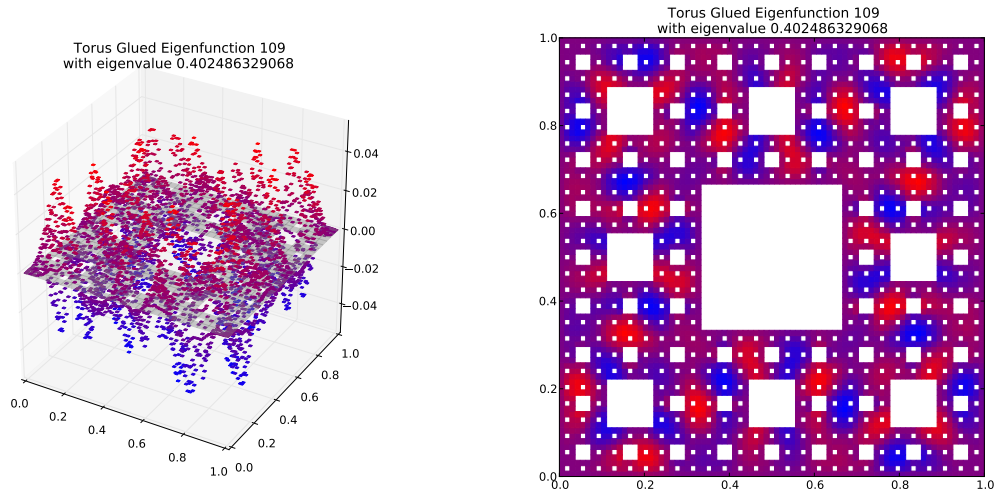
Compare to  $m = 3$  eigenspace with eigenvalue 2.19006715064



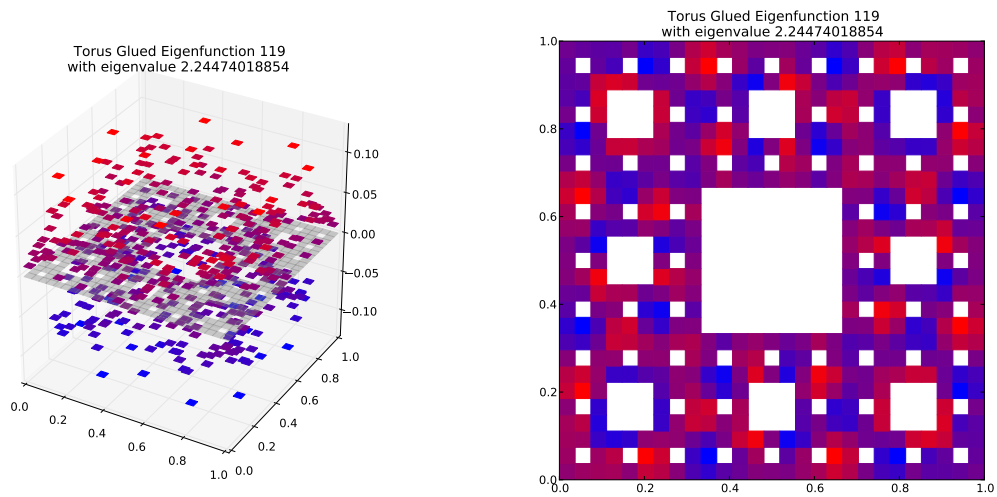
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183262239594$   
Dot Value: 0.216243484414409

# 110 $M = 4$ Eigenfunction 109

$M = 4$  Eigenfunction 109 has eigenvalue 0.402486329068



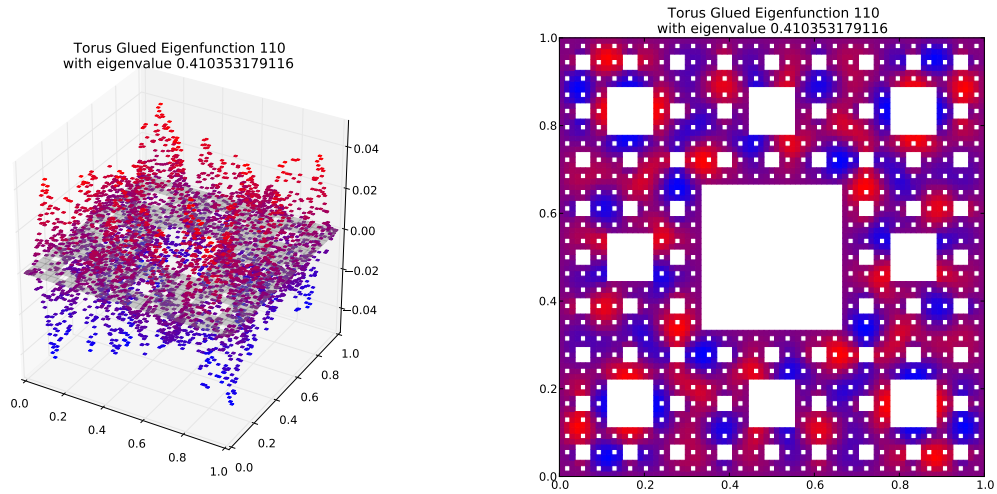
Compare to  $m = 3$  eigenspace with eigenvalue 2.24474018854



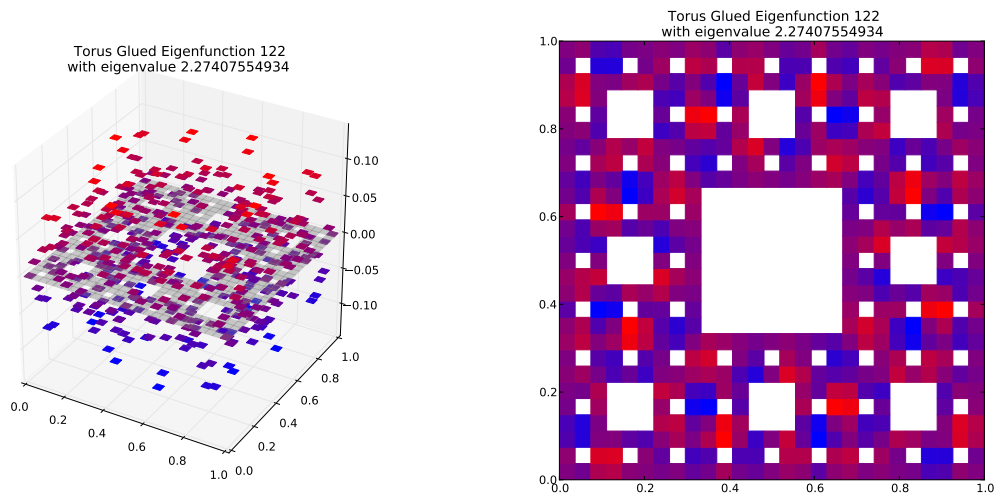
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.179301966046$   
Dot Value: 0.217526504540432

# 111 $M = 4$ Eigenfunction 110

$M = 4$  Eigenfunction 110 has eigenvalue 0.410353179116



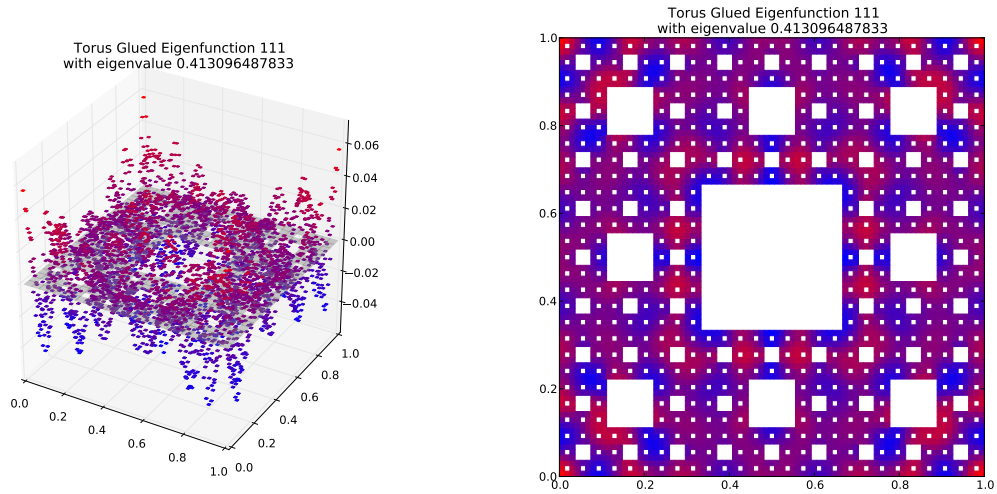
Compare to  $m = 3$  eigenspace with eigenvalue 2.27407554934



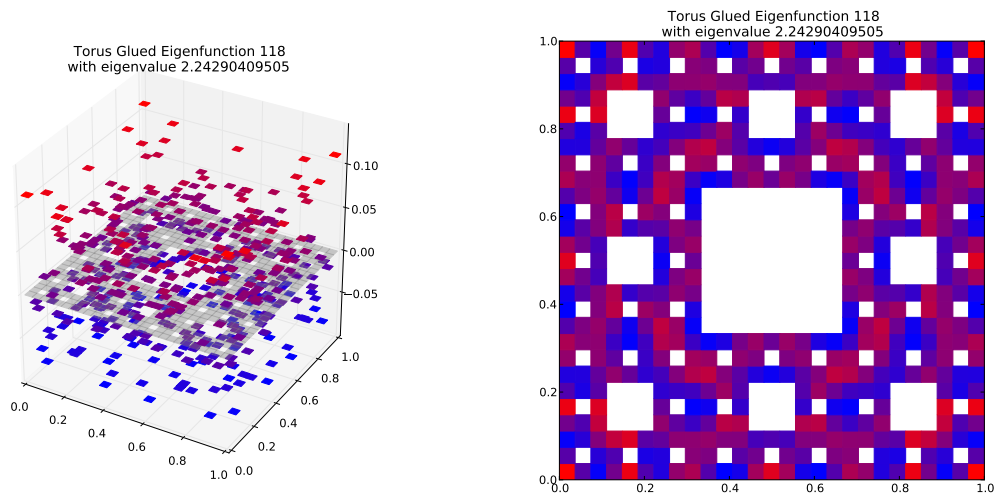
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.180448349324$   
Dot Value: 0.19930273453801595

## 112 $M = 4$ Eigenfunction 111

$M = 4$  Eigenfunction 111 has eigenvalue 0.413096487833



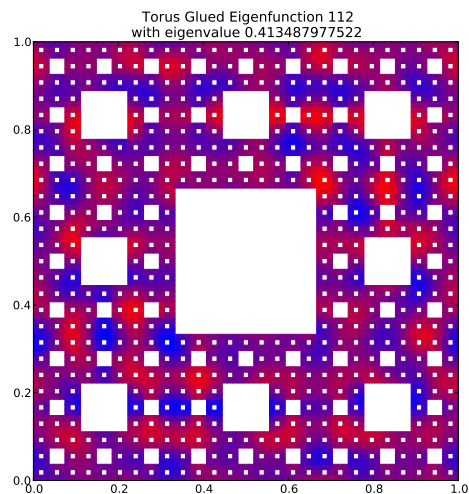
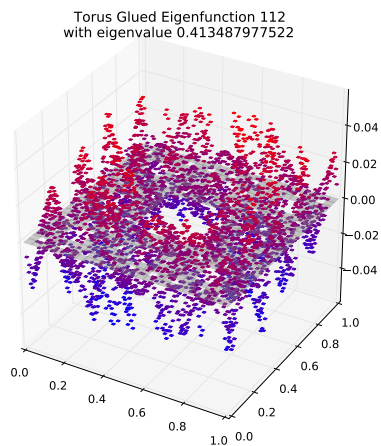
Compare to  $m = 3$  eigenspace with eigenvalue 2.24290409505



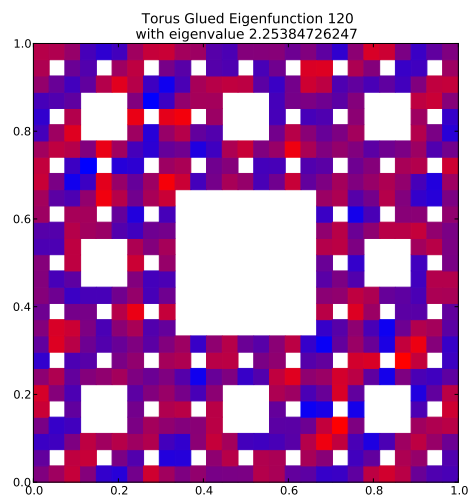
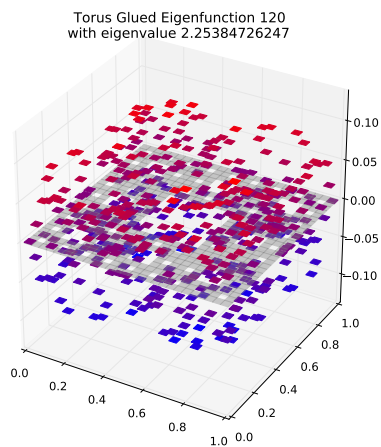
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.184179291814$   
Dot Value: 0.35043644644604544

# 113 $M = 4$ Eigenfunction 112

$M = 4$  Eigenfunction 112 has eigenvalue 0.413487977522



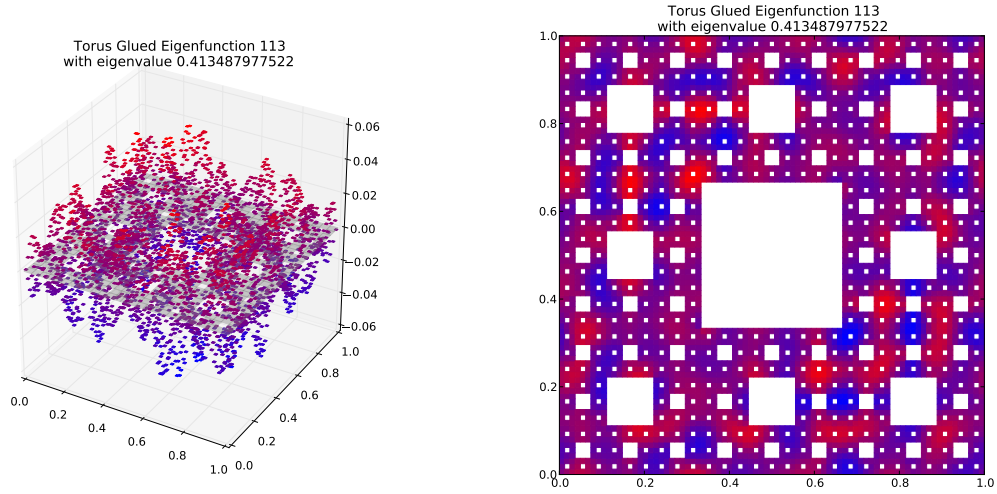
Compare to  $m = 3$  eigenspace with eigenvalue 2.25384726247  
(Note: Eigenspace Dimension  $> 1$ )



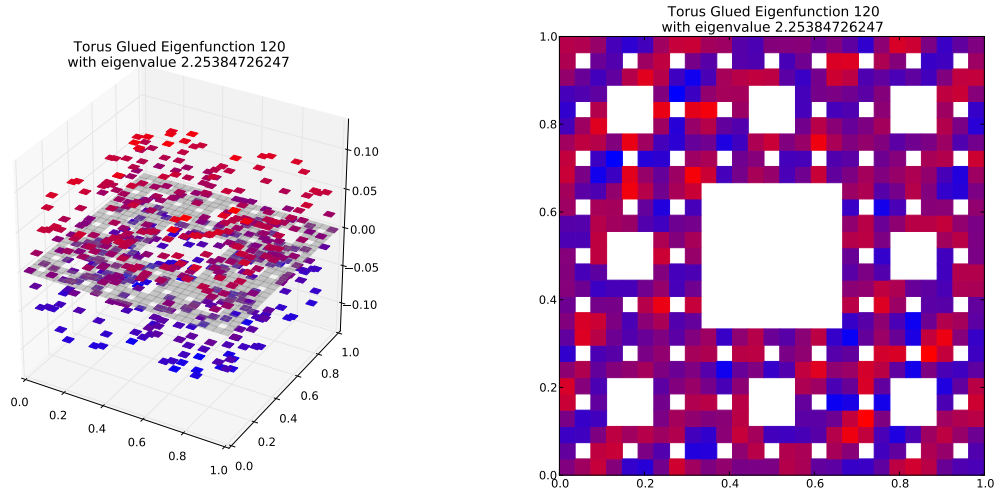
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183458739378$   
Dot Value: 0.36901491700651845

# 114 $M = 4$ Eigenfunction 113

$M = 4$  Eigenfunction 113 has eigenvalue 0.413487977522



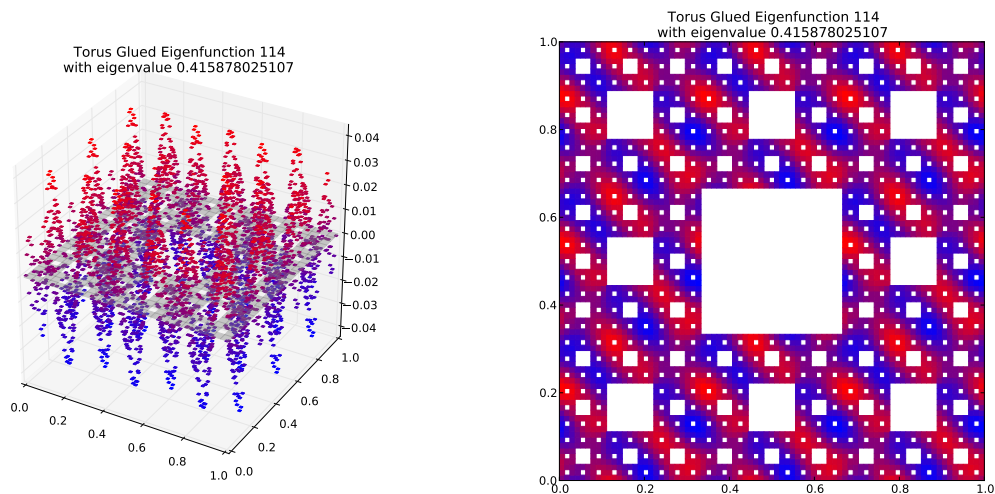
Compare to  $m = 3$  eigenspace with eigenvalue 2.25384726247  
(Note: Eigenspace Dimension  $> 1$ )



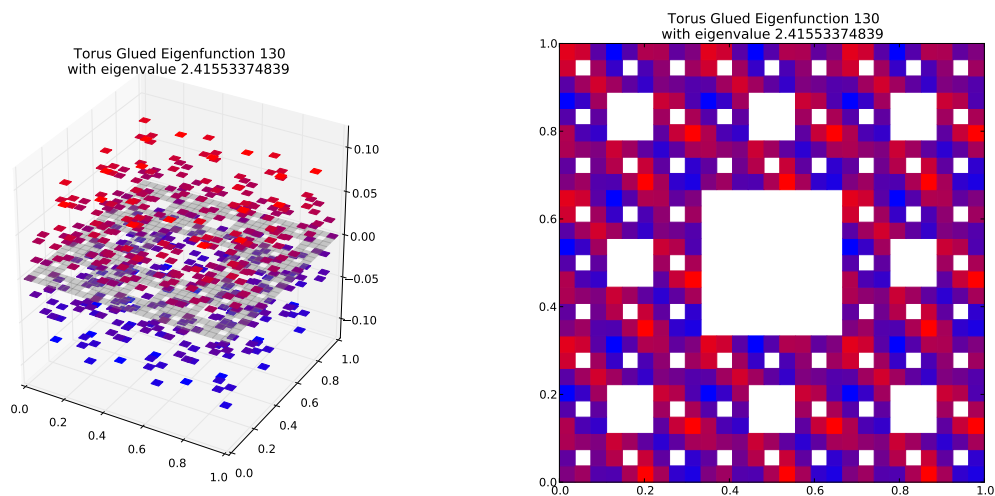
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183458739378$   
Dot Value: 0.36901491700637623

# 115 $M = 4$ Eigenfunction 114

$M = 4$  Eigenfunction 114 has eigenvalue 0.415878025107



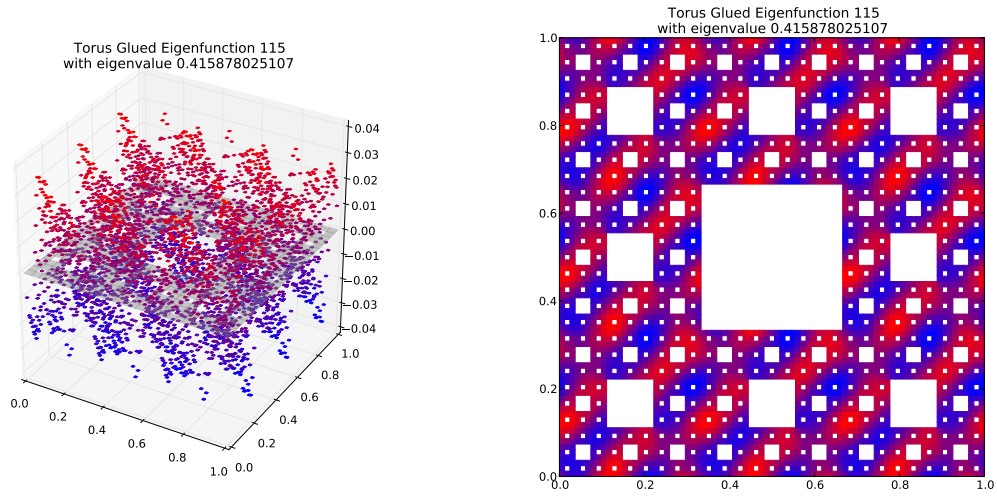
Compare to  $m = 3$  eigenspace with eigenvalue 2.41553374839  
(Note: Eigenspace Dimension  $> 1$ )



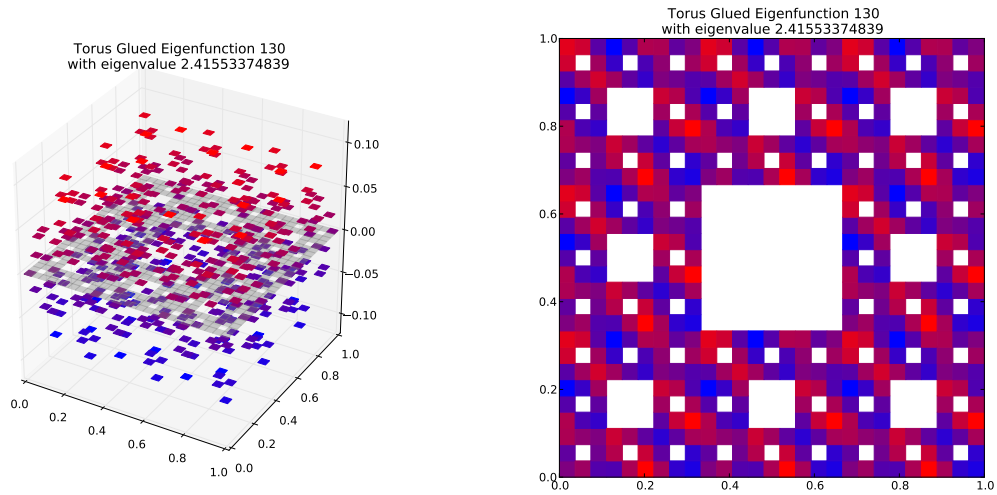
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.17216817003$   
Dot Value: 0.010739287809013565

# 116 $M = 4$ Eigenfunction 115

$M = 4$  Eigenfunction 115 has eigenvalue 0.415878025107



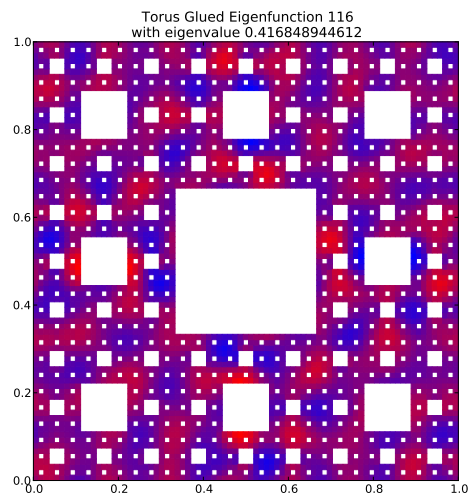
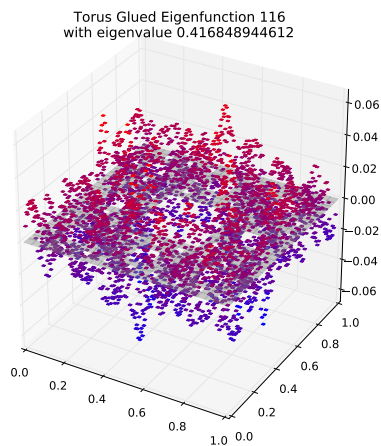
Compare to  $m = 3$  eigenspace with eigenvalue 2.41553374839  
(Note: Eigenspace Dimension  $> 1$ )



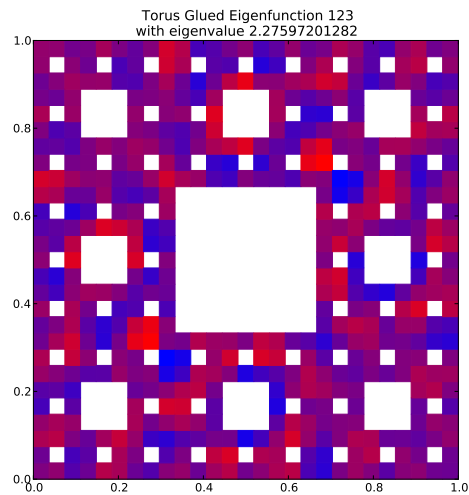
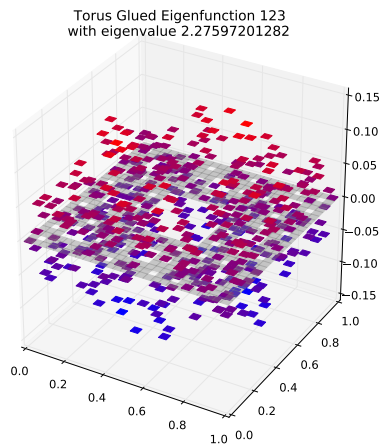
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.17216817003$   
Dot Value: 0.010739287809012565

# 117 $M = 4$ Eigenfunction 116

$M = 4$  Eigenfunction 116 has eigenvalue 0.416848944612



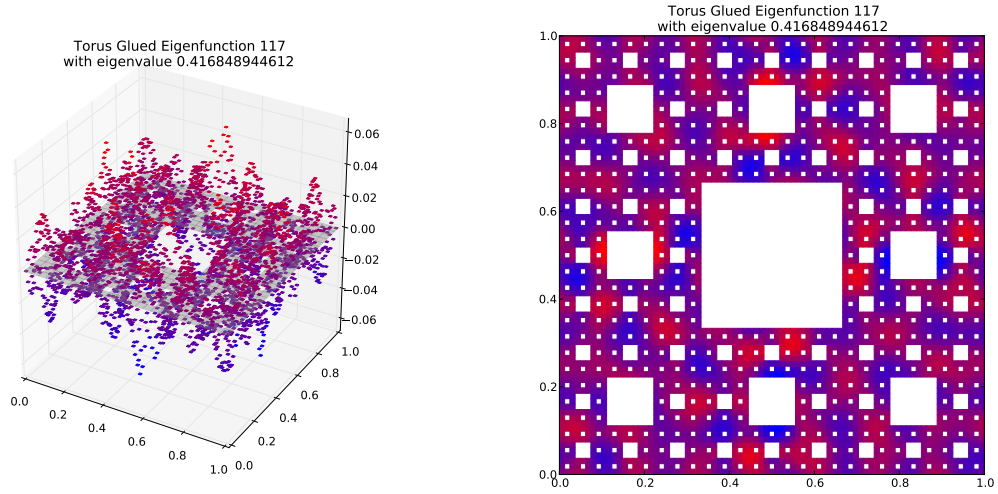
Compare to  $m = 3$  eigenspace with eigenvalue 2.27597201282  
(Note: Eigenspace Dimension  $> 1$ )



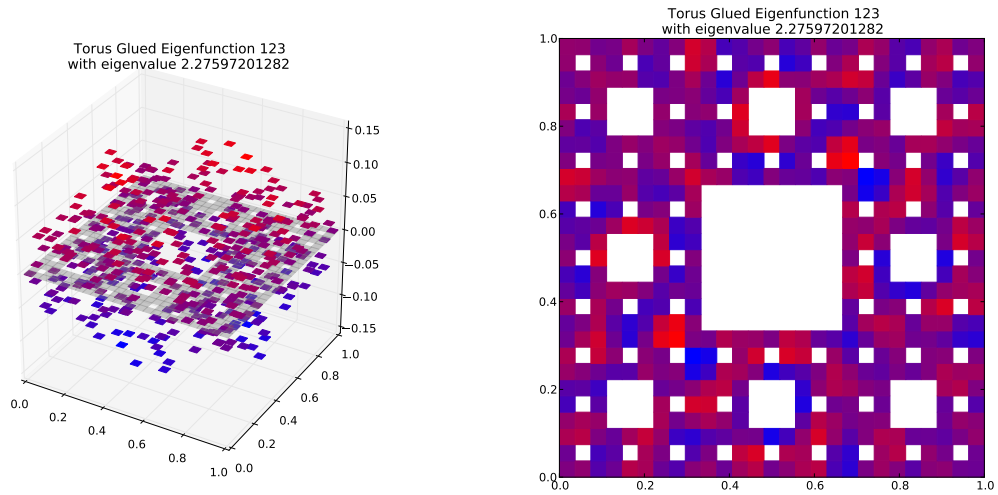
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183152052074$   
Dot Value: 0.31054975563010434

# 118 $M = 4$ Eigenfunction 117

$M = 4$  Eigenfunction 117 has eigenvalue 0.416848944612



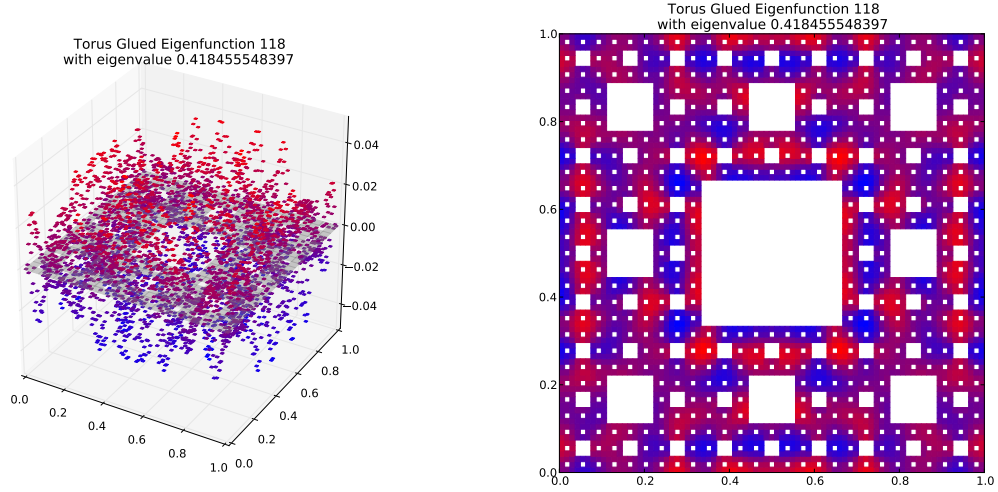
Compare to  $m = 3$  eigenspace with eigenvalue 2.27597201282  
(Note: Eigenspace Dimension  $> 1$ )



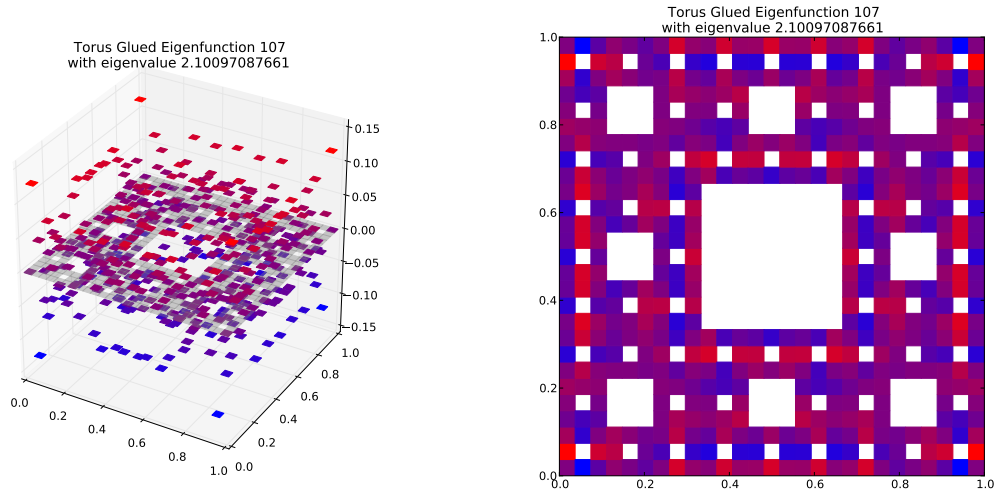
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.183152052074$   
Dot Value: 0.31054975563011356

# 119 $M = 4$ Eigenfunction 118

$M = 4$  Eigenfunction 118 has eigenvalue 0.418455548397



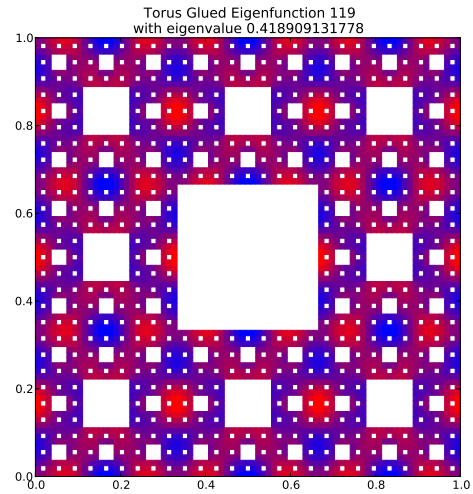
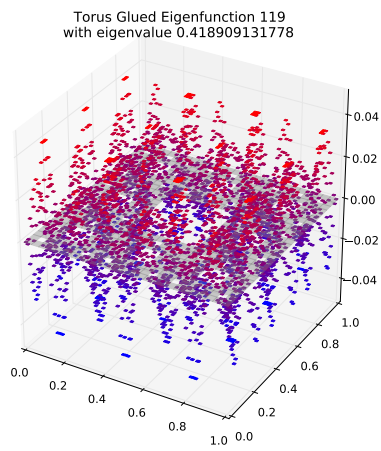
Compare to  $m = 3$  eigenspace with eigenvalue 2.10097087661



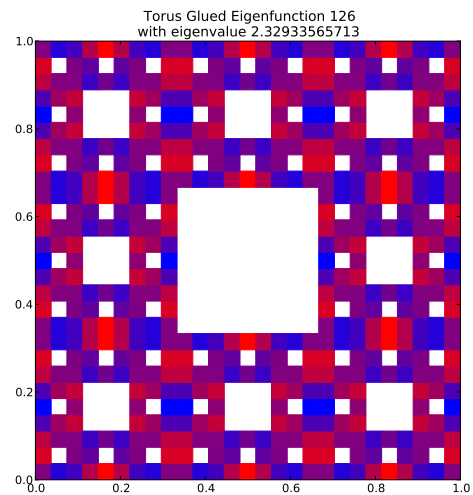
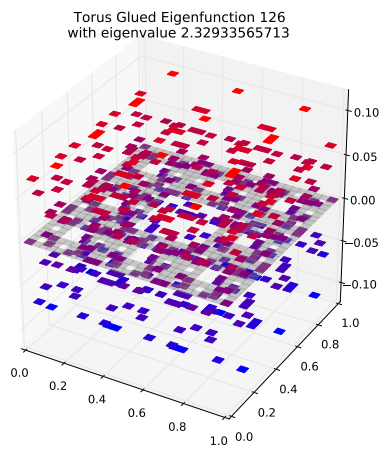
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.199172465004$   
Dot Value: 0.09231944740266351

## 120 $M = 4$ Eigenfunction 119

$M = 4$  Eigenfunction 119 has eigenvalue 0.418909131778



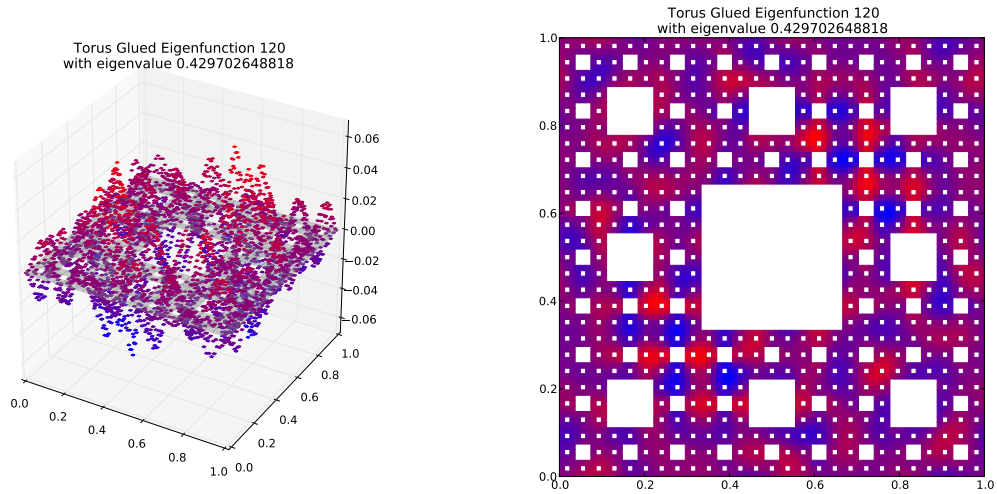
Compare to  $m = 3$  eigenspace with eigenvalue 2.32933565713



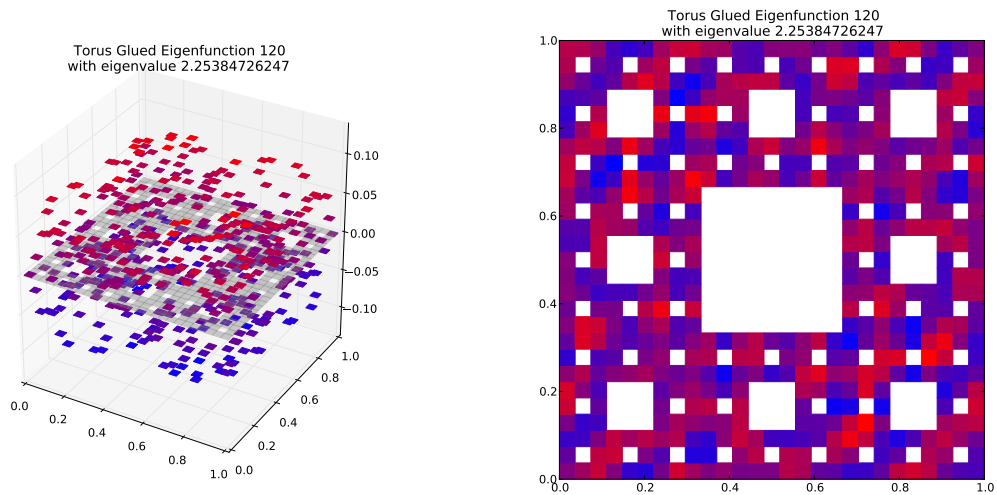
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.17984060412$   
Dot Value: 0.0136542351530623

## 121 $M = 4$ Eigenfunction 120

$M = 4$  Eigenfunction 120 has eigenvalue 0.429702648818



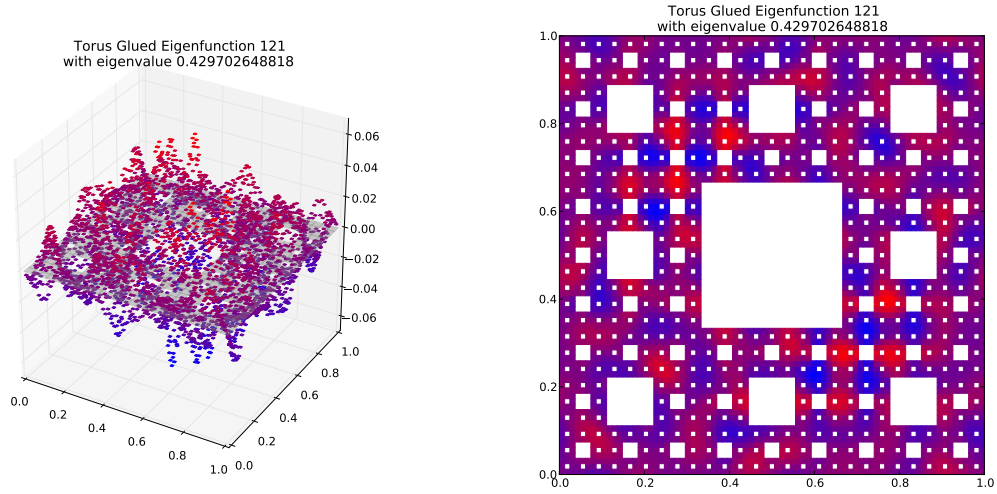
Compare to  $m = 3$  eigenspace with eigenvalue 2.25384726247  
(Note: Eigenspace Dimension  $> 1$ )



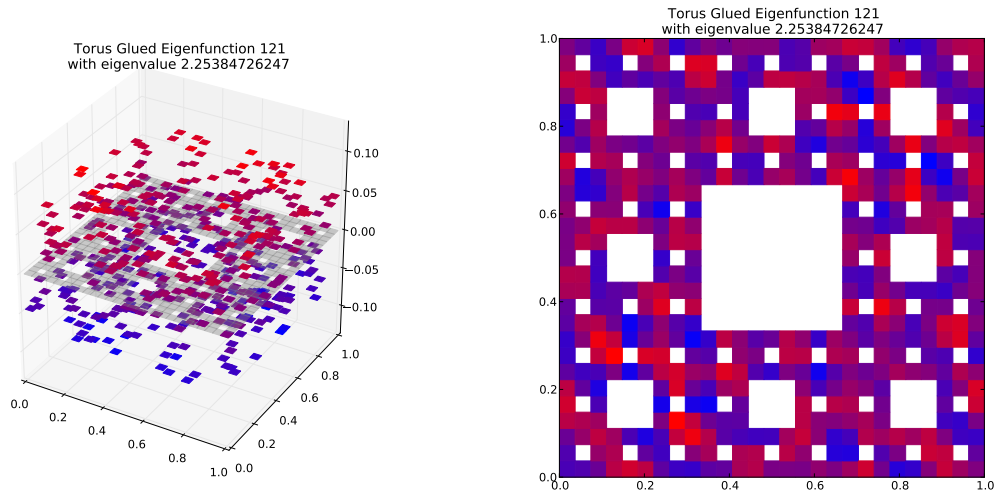
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.190652958598$   
Dot Value: 0.5121929497498976

## 122 $M = 4$ Eigenfunction 121

$M = 4$  Eigenfunction 121 has eigenvalue 0.429702648818



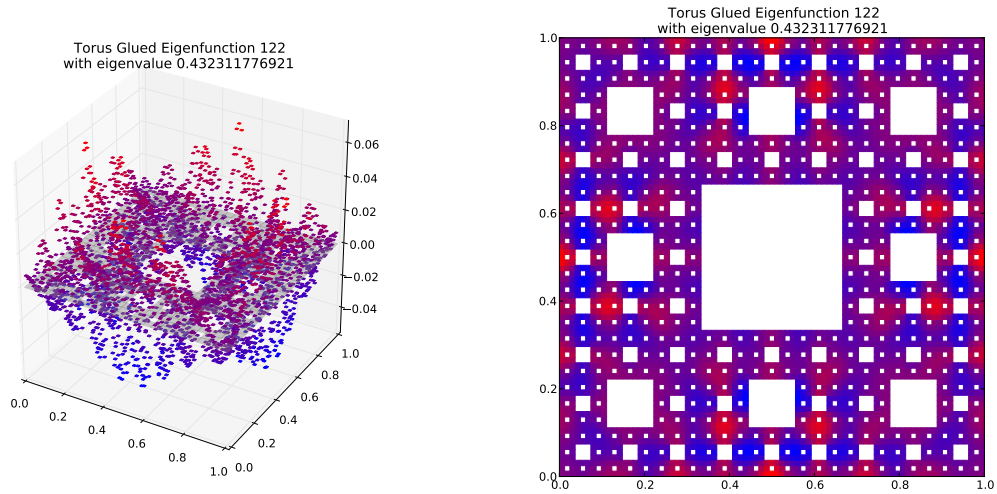
Compare to  $m = 3$  eigenspace with eigenvalue 2.25384726247  
(Note: Eigenspace Dimension  $> 1$ )



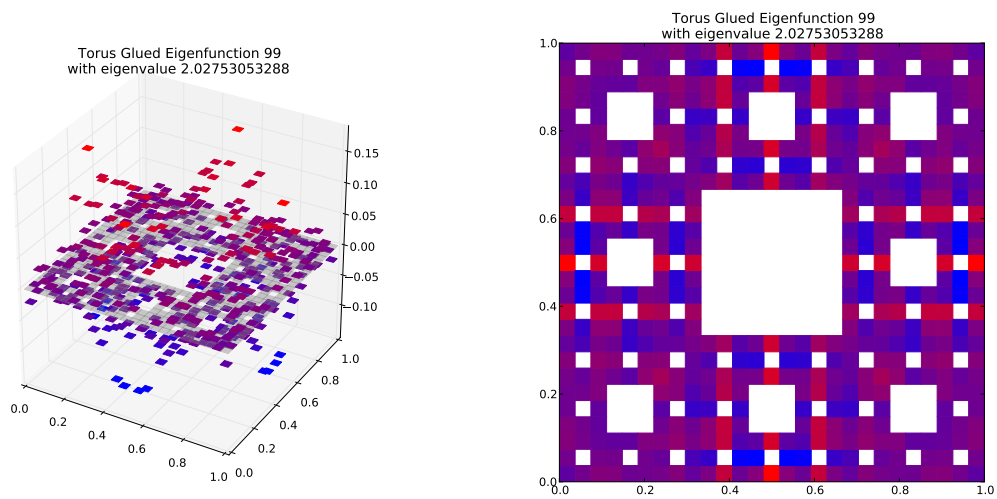
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.190652958598$   
Dot Value: 0.5121929497498998

## 123 $M = 4$ Eigenfunction 122

$M = 4$  Eigenfunction 122 has eigenvalue 0.432311776921



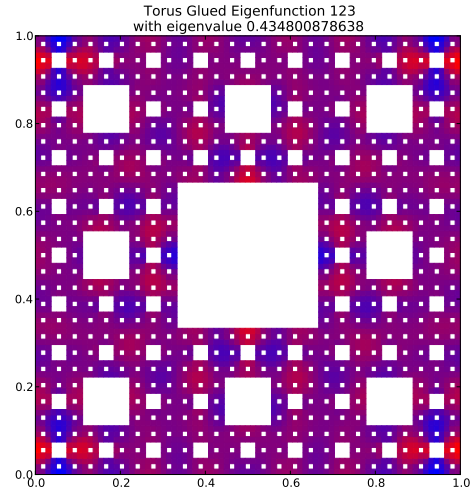
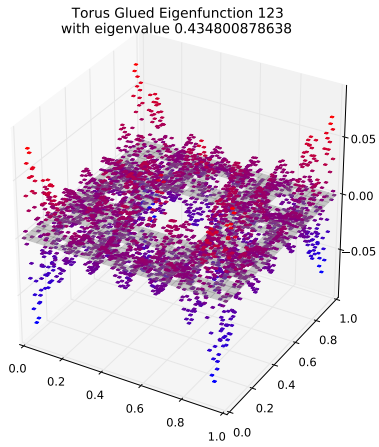
Compare to  $m = 3$  eigenspace with eigenvalue 2.02753053288



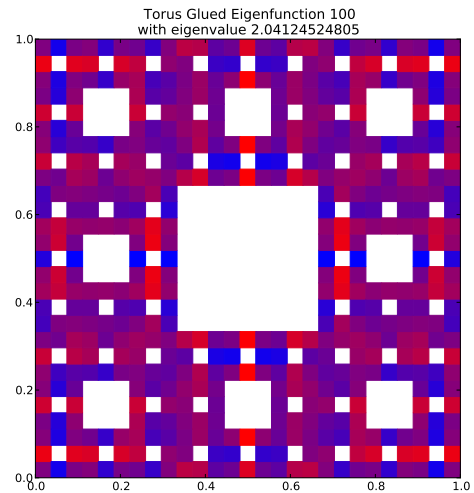
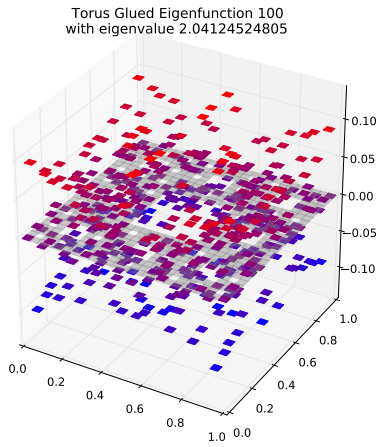
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.213220846695$   
Dot Value: 0.24296672298225042

# 124 $M = 4$ Eigenfunction 123

$M = 4$  Eigenfunction 123 has eigenvalue 0.434800878638



Compare to  $m = 3$  eigenspace with eigenvalue 2.04124524805

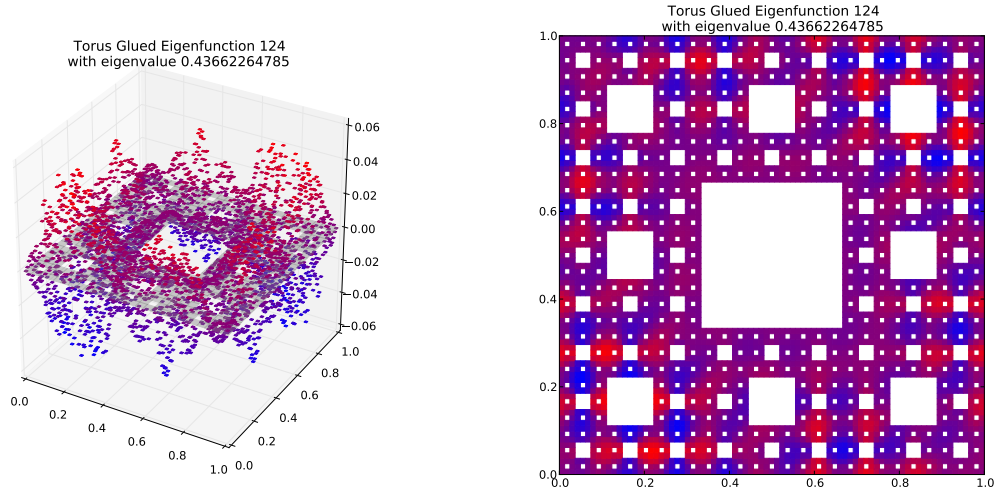


Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.213007662383$

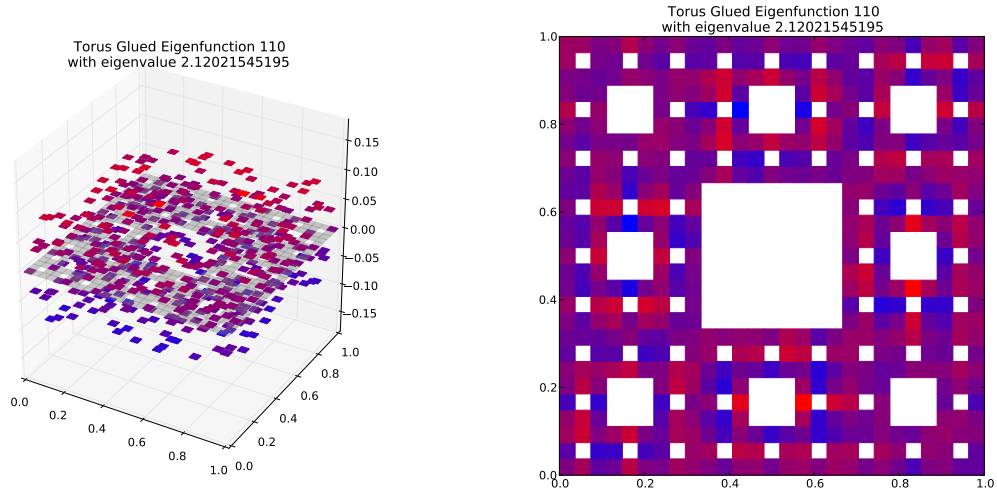
Dot Value: 0.33996118472818093

# 125 $M = 4$ Eigenfunction 124

$M = 4$  Eigenfunction 124 has eigenvalue 0.43662264785



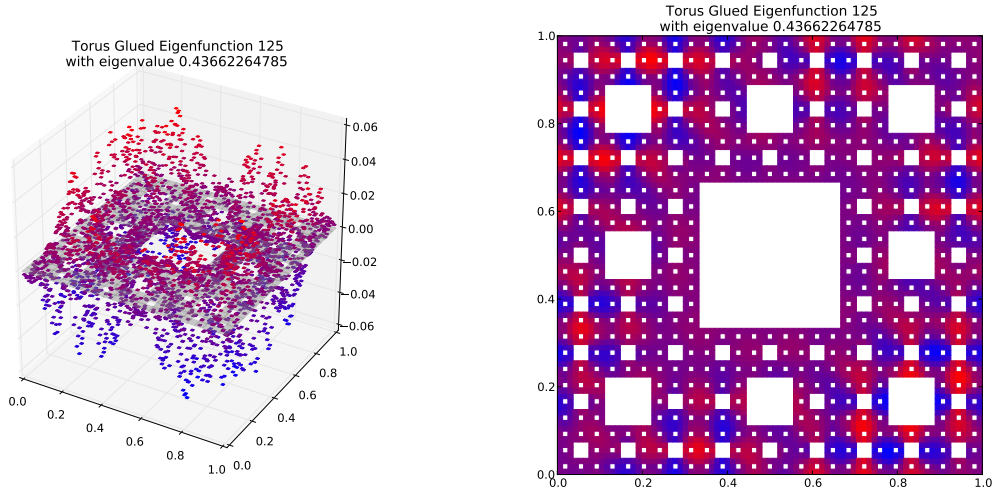
Compare to  $m = 3$  eigenspace with eigenvalue 2.12021545195  
(Note: Eigenspace Dimension  $> 1$ )



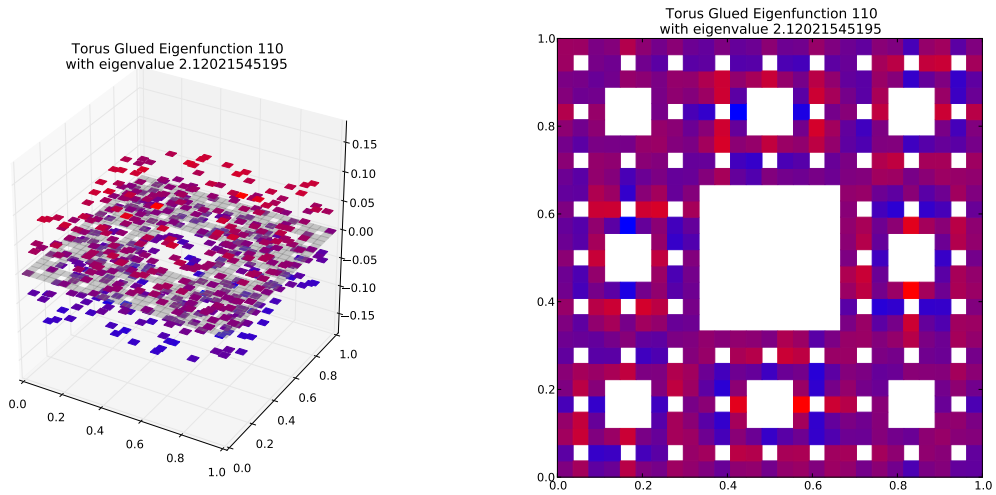
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.205933150543$   
Dot Value: 0.4557564464120458

# 126 $M = 4$ Eigenfunction 125

$M = 4$  Eigenfunction 125 has eigenvalue 0.43662264785



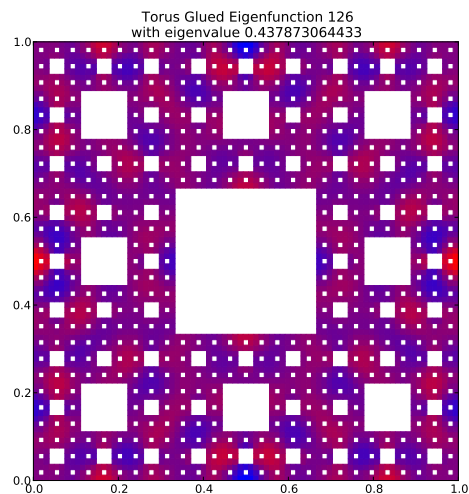
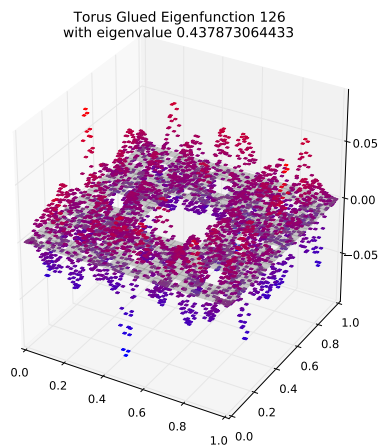
Compare to  $m = 3$  eigenspace with eigenvalue 2.12021545195  
(Note: Eigenspace Dimension  $> 1$ )



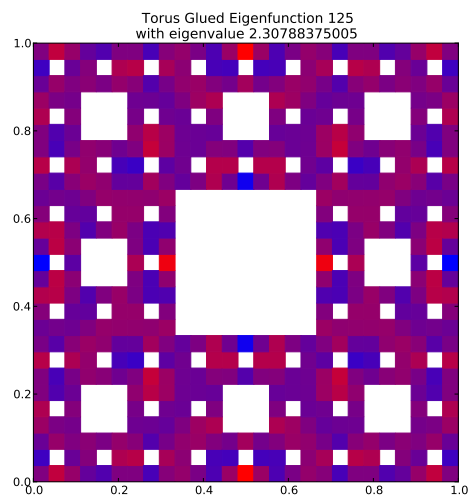
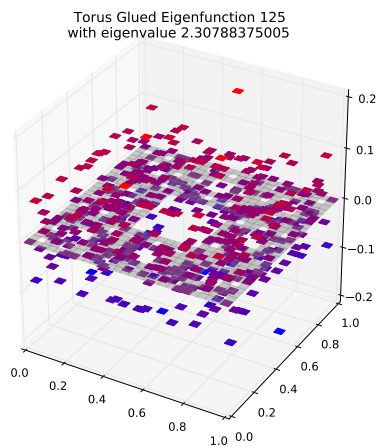
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.205933150543$   
Dot Value: 0.45575644641205226

## 127 $M = 4$ Eigenfunction 126

$M = 4$  Eigenfunction 126 has eigenvalue 0.437873064433



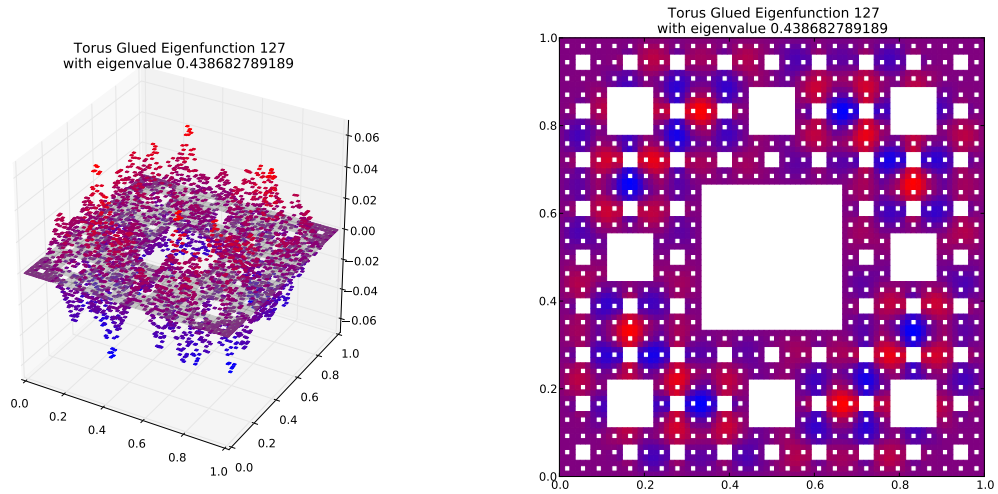
Compare to  $m = 3$  eigenspace with eigenvalue 2.30788375005



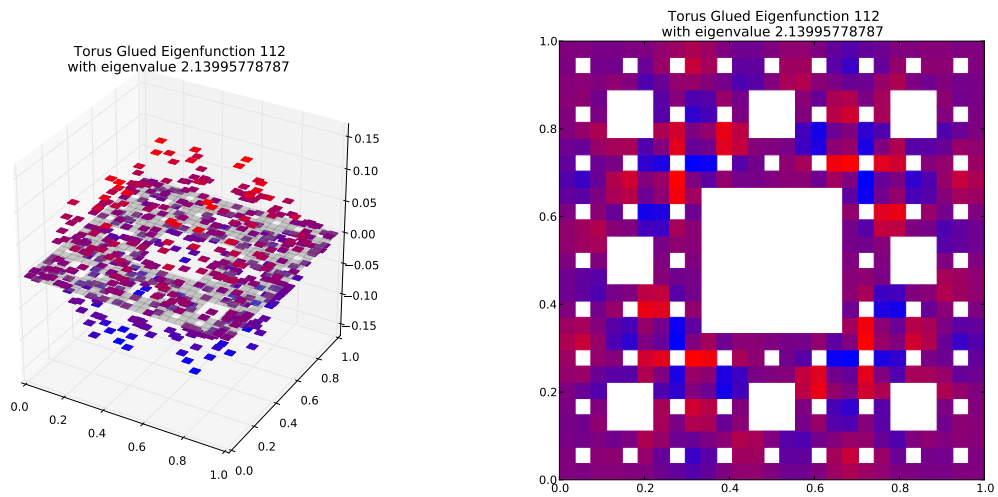
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.189729254961$   
Dot Value: 0.17306031807319877

# 128 $M = 4$ Eigenfunction 127

$M = 4$  Eigenfunction 127 has eigenvalue 0.438682789189



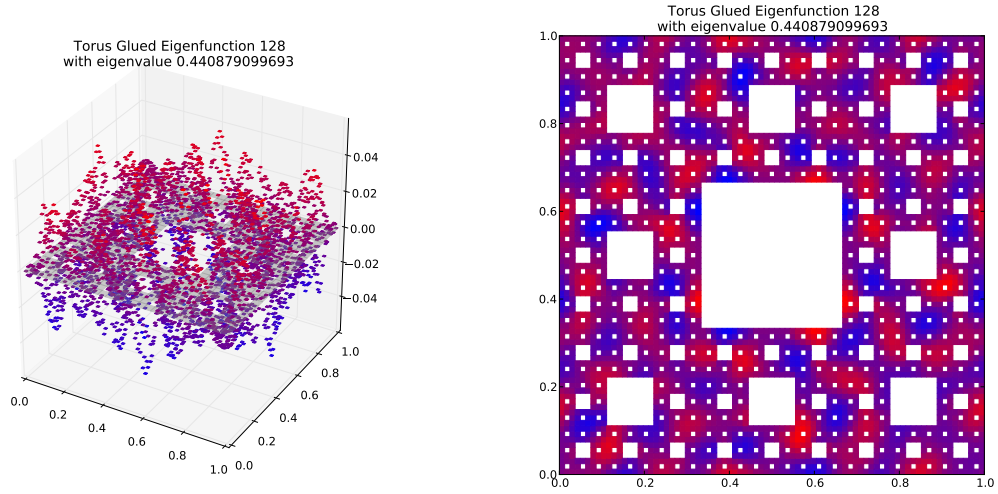
Compare to  $m = 3$  eigenspace with eigenvalue 2.13995778787



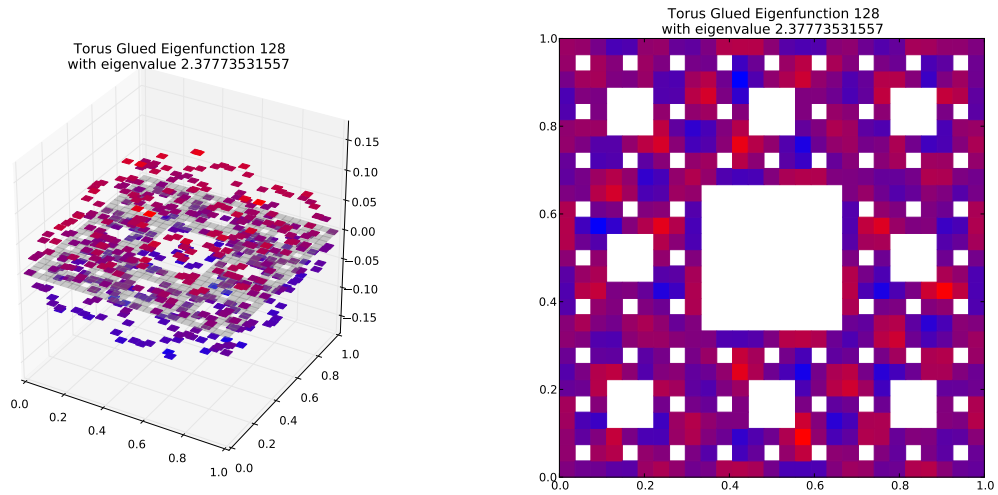
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.204996001171$   
Dot Value: 0.4329677394408593

# 129 $M = 4$ Eigenfunction 128

$M = 4$  Eigenfunction 128 has eigenvalue 0.440879099693



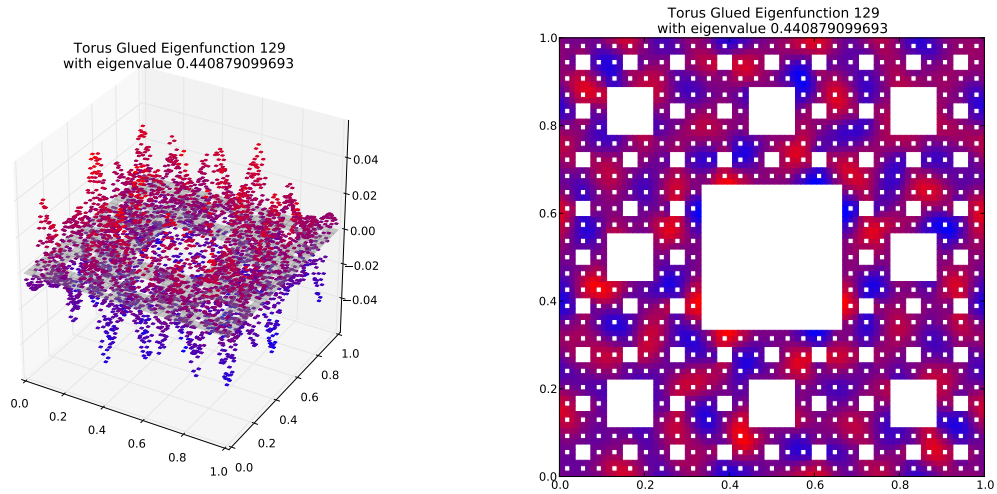
Compare to  $m = 3$  eigenspace with eigenvalue 2.37773531557  
(Note: Eigenspace Dimension  $> 1$ )



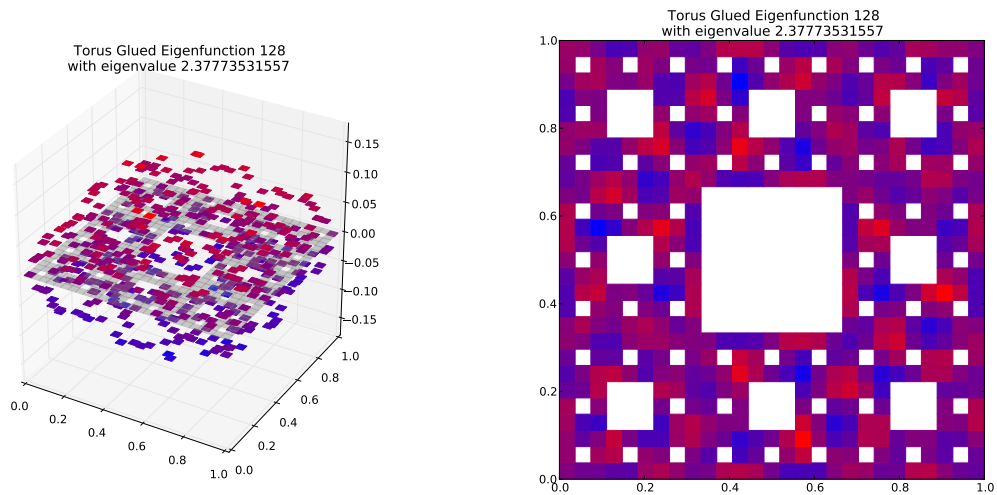
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.185419755011$   
Dot Value: 0.14076231138569495

# 130 $M = 4$ Eigenfunction 129

$M = 4$  Eigenfunction 129 has eigenvalue 0.440879099693



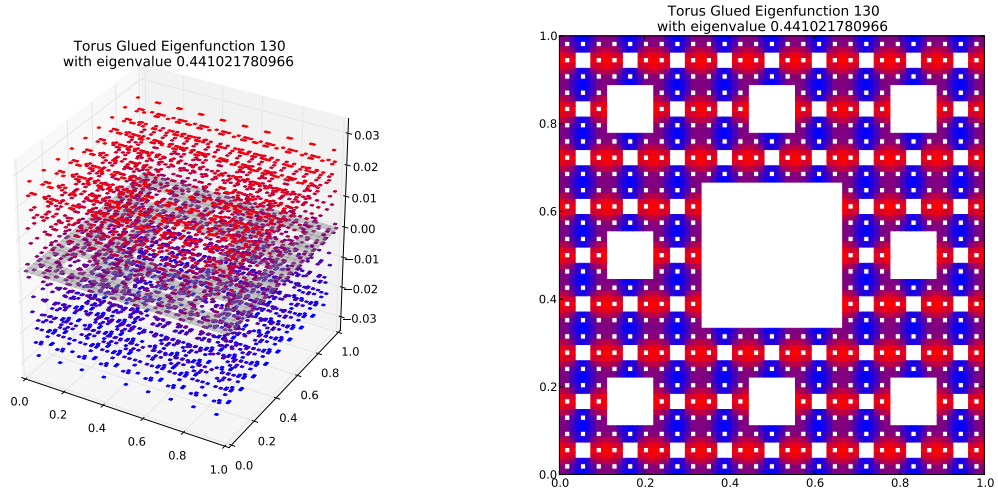
Compare to  $m = 3$  eigenspace with eigenvalue 2.37773531557  
(Note: Eigenspace Dimension  $> 1$ )



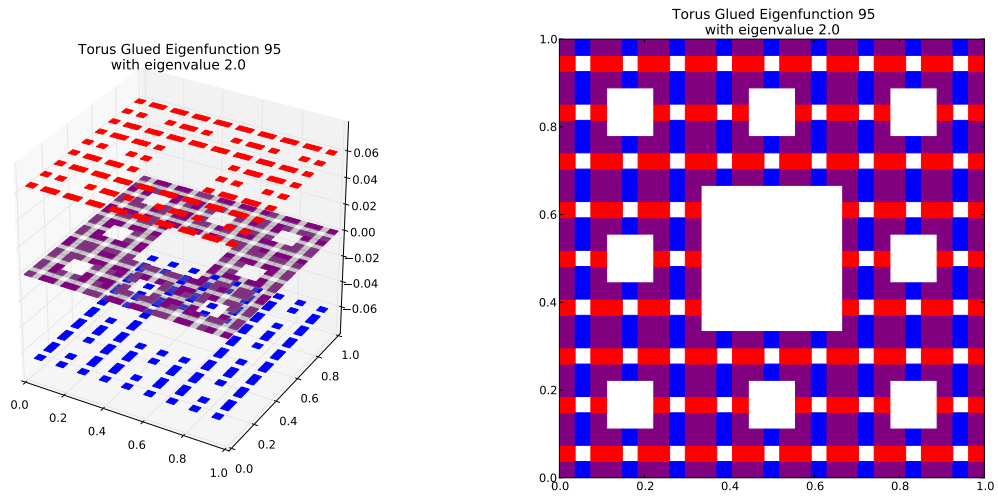
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.185419755011$   
Dot Value: 0.14076231138568163

# 131 $M = 4$ Eigenfunction 130

$M = 4$  Eigenfunction 130 has eigenvalue 0.441021780966



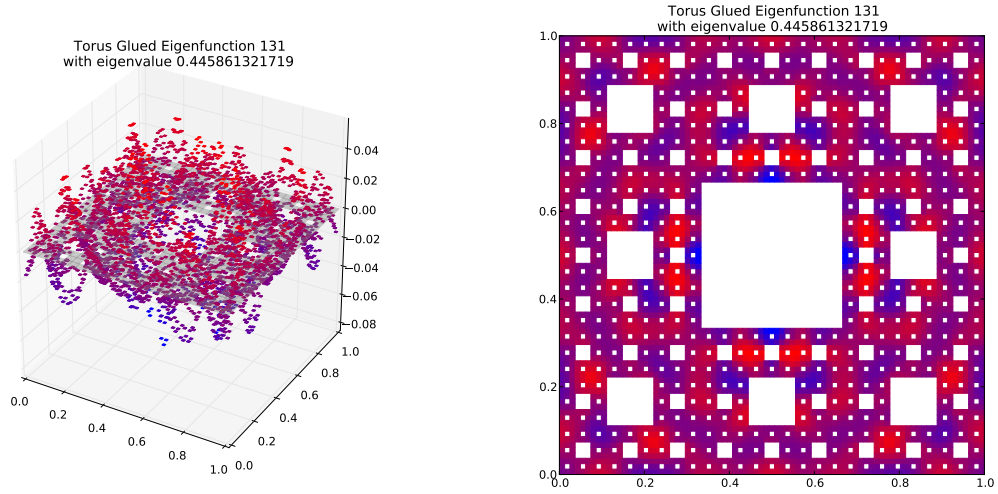
Compare to  $m = 3$  eigenspace with eigenvalue 2.0



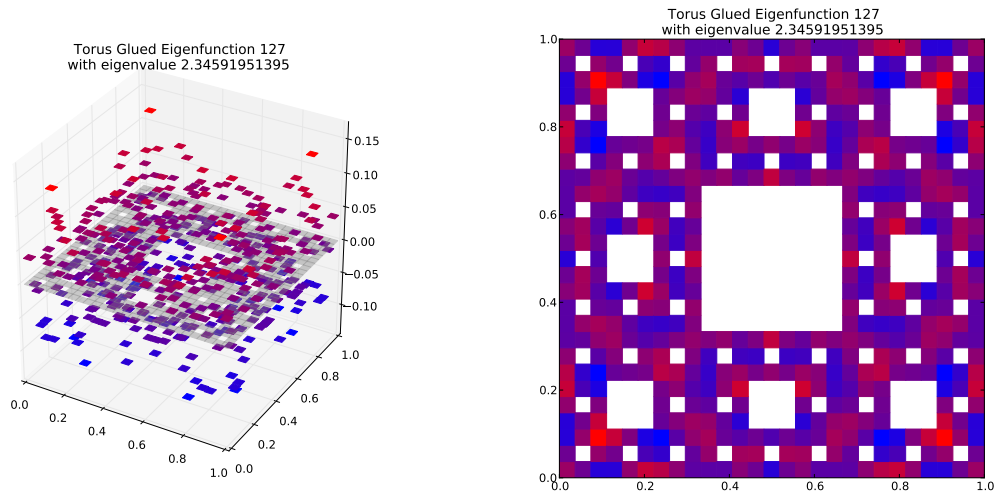
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.220510890483$   
Dot Value: 0.0

# 132 $M = 4$ Eigenfunction 131

$M = 4$  Eigenfunction 131 has eigenvalue 0.445861321719



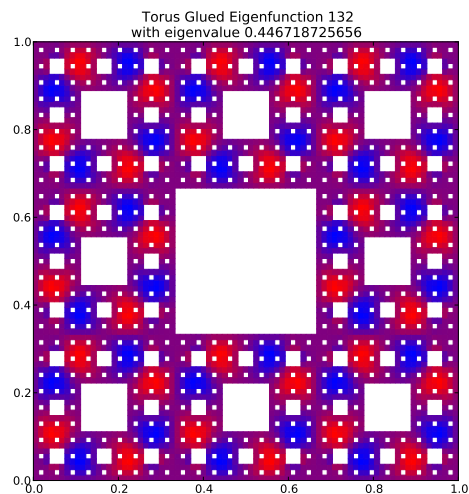
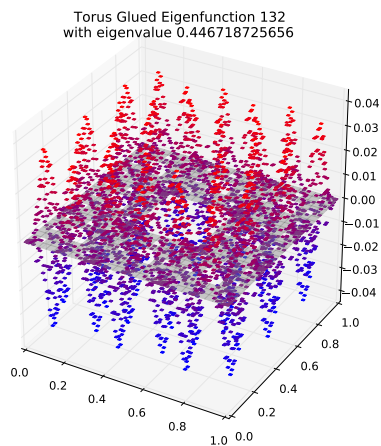
Compare to  $m = 3$  eigenspace with eigenvalue 2.34591951395



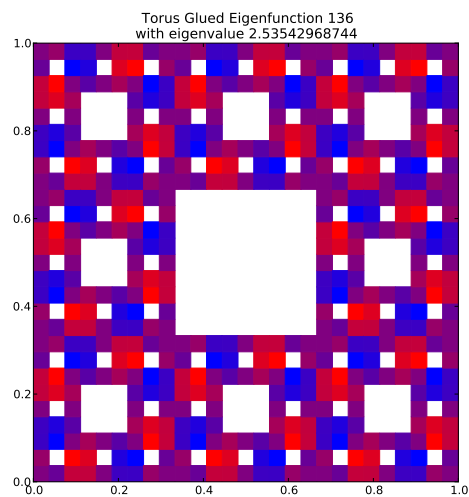
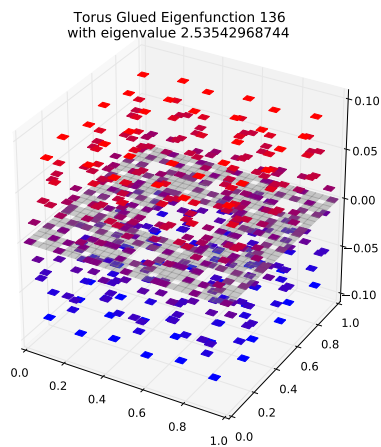
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.190058234764$   
Dot Value: 0.17232777508582753

### 133 $M = 4$ Eigenfunction 132

$M = 4$  Eigenfunction 132 has eigenvalue 0.446718725656



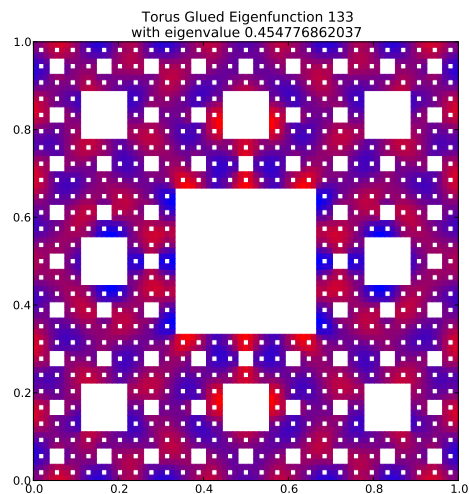
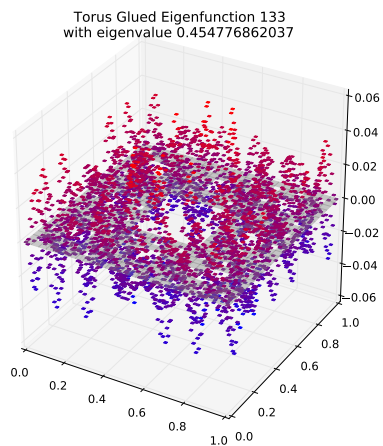
Compare to  $m = 3$  eigenspace with eigenvalue 2.53542968744



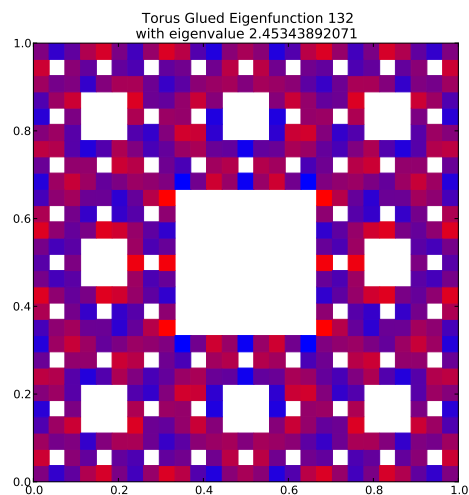
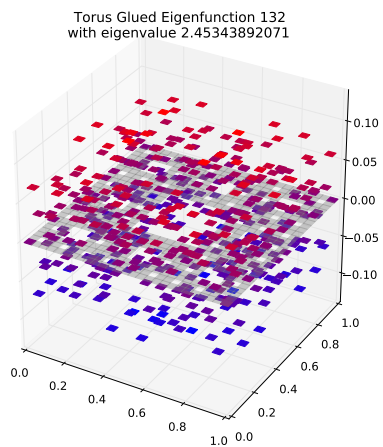
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.176190539958$   
Dot Value: 0.004999943466274859

# 134 $M = 4$ Eigenfunction 133

$M = 4$  Eigenfunction 133 has eigenvalue 0.454776862037



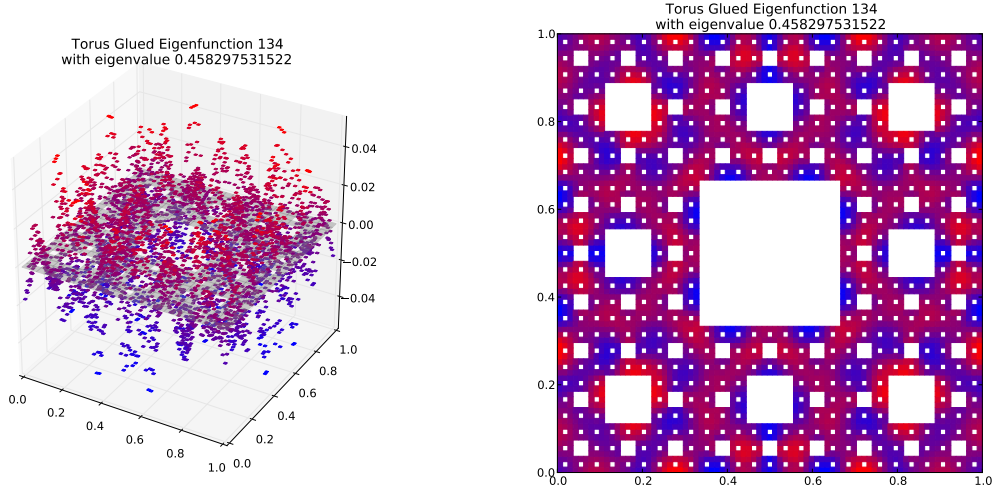
Compare to  $m = 3$  eigenspace with eigenvalue 2.45343892071



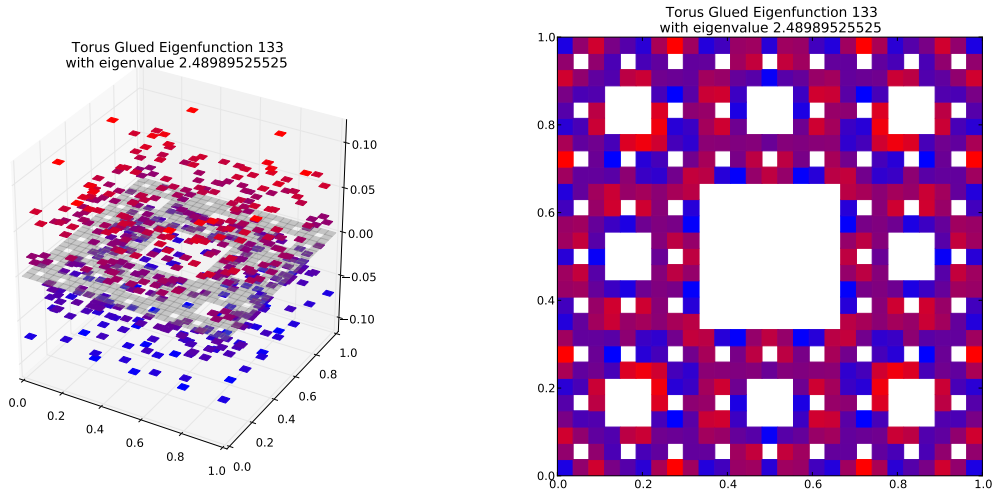
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.185363025832$   
Dot Value: 0.06287660199009404

# 135 $M = 4$ Eigenfunction 134

$M = 4$  Eigenfunction 134 has eigenvalue 0.458297531522



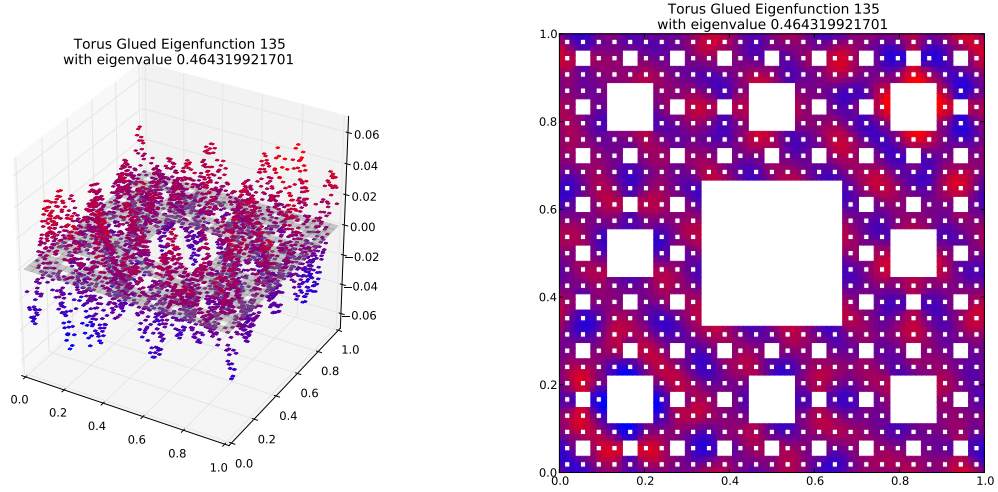
Compare to  $m = 3$  eigenspace with eigenvalue 2.48989525525



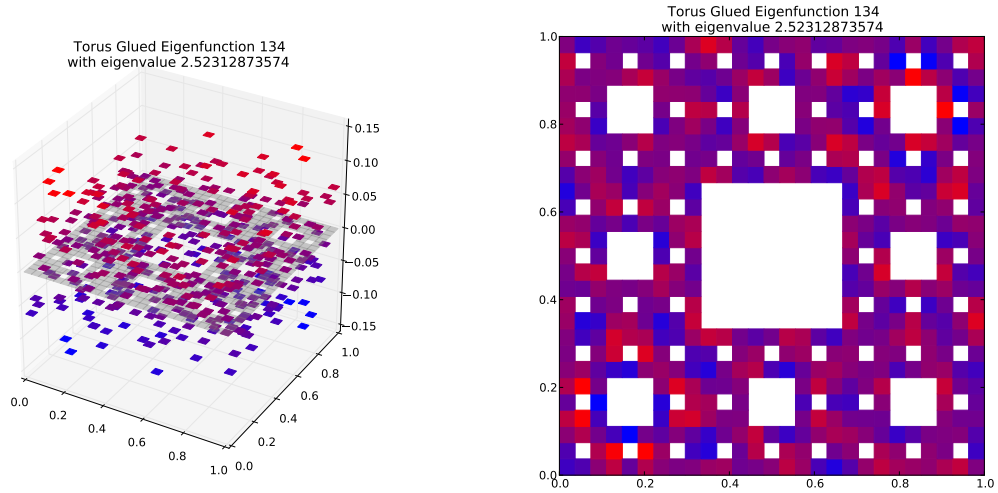
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.184062976366$   
Dot Value: 0.08654700753638023

# 136 $M = 4$ Eigenfunction 135

$M = 4$  Eigenfunction 135 has eigenvalue 0.464319921701



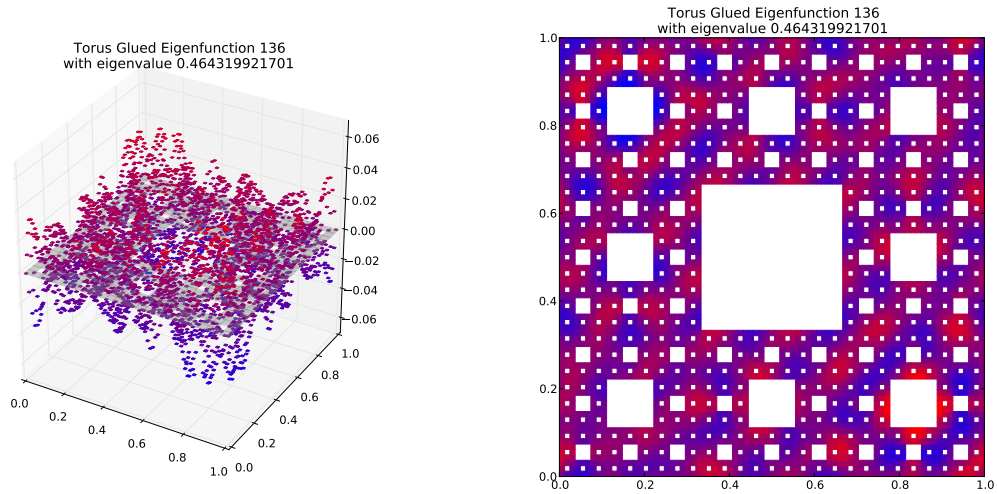
Compare to  $m = 3$  eigenspace with eigenvalue 2.52312873574  
(Note: Eigenspace Dimension  $> 1$ )



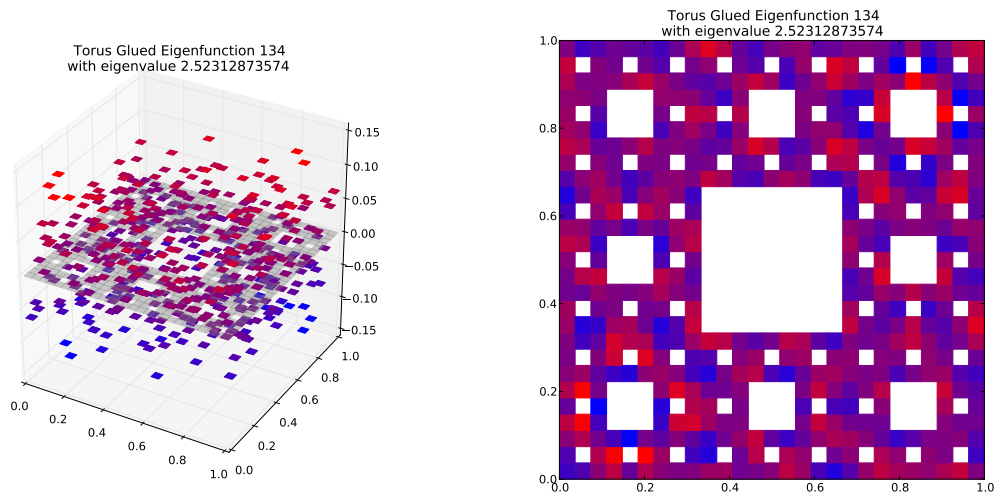
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.184025458203$   
Dot Value: 0.060943108073085894

# 137 $M = 4$ Eigenfunction 136

$M = 4$  Eigenfunction 136 has eigenvalue 0.464319921701



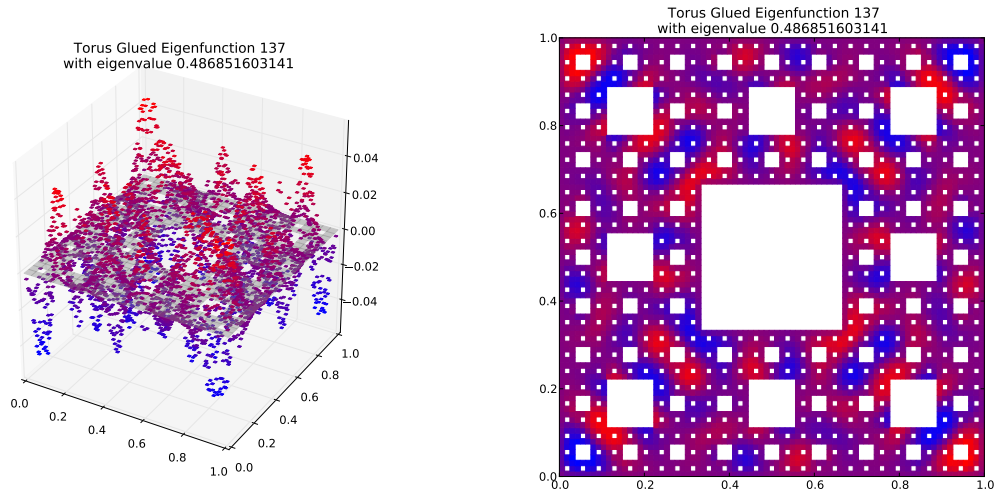
Compare to  $m = 3$  eigenspace with eigenvalue 2.52312873574  
(Note: Eigenspace Dimension  $> 1$ )



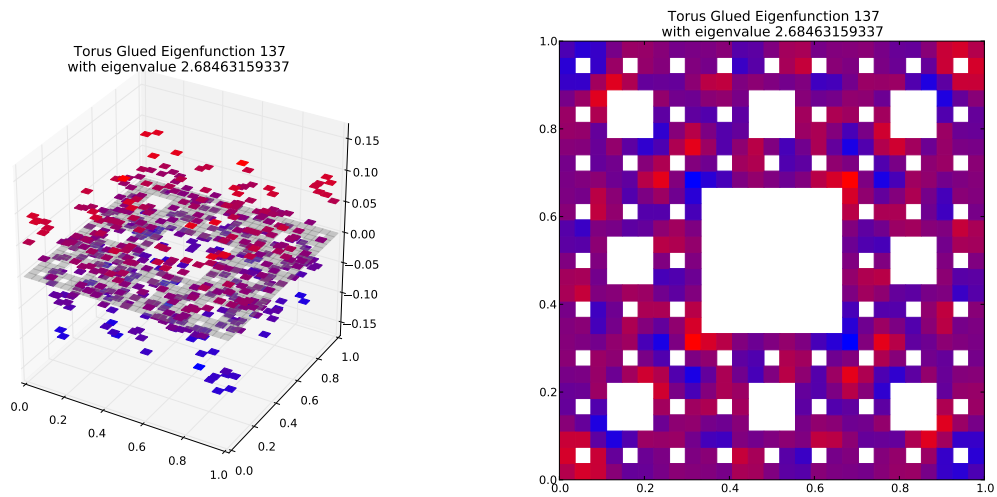
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.184025458203$   
Dot Value: 0.06094310807308845

# 138 $M = 4$ Eigenfunction 137

$M = 4$  Eigenfunction 137 has eigenvalue 0.486851603141



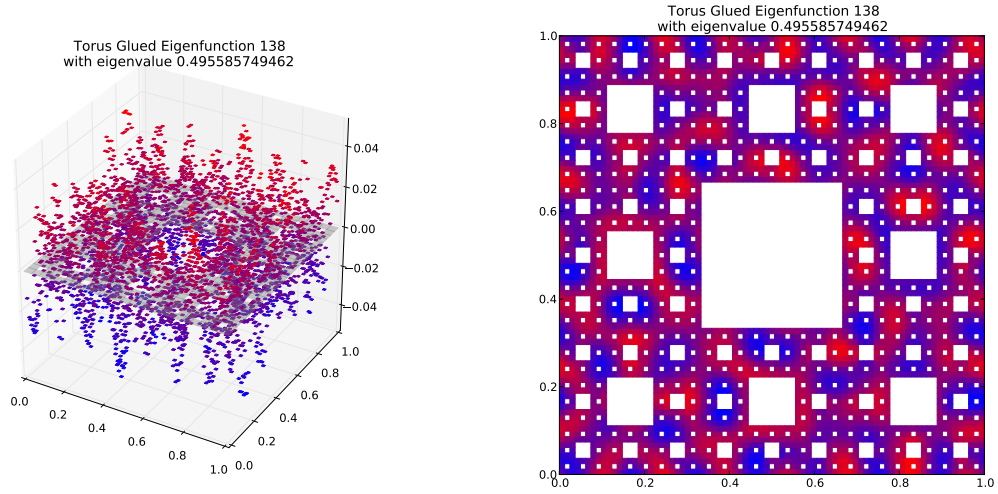
Compare to  $m = 3$  eigenspace with eigenvalue 2.68463159337



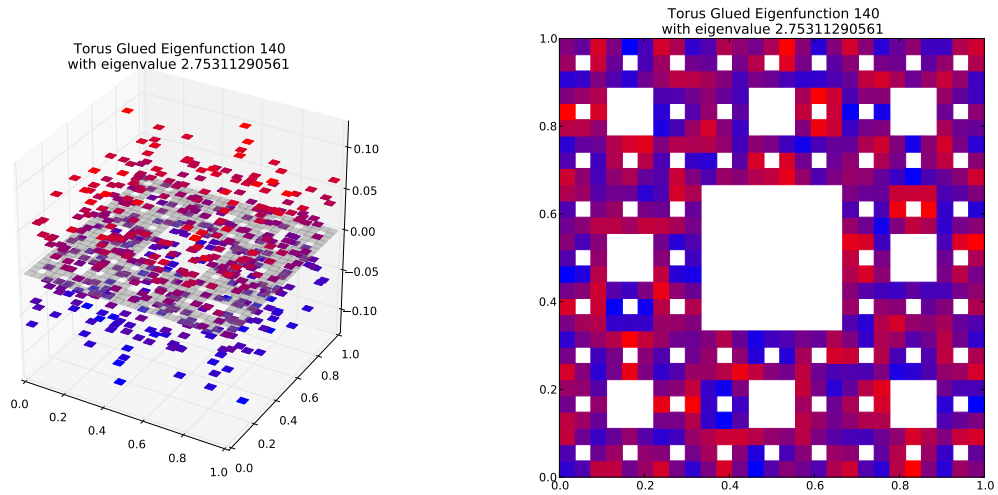
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.181347639782$   
Dot Value: 0.06611927927110994

# 139 $M = 4$ Eigenfunction 138

$M = 4$  Eigenfunction 138 has eigenvalue 0.495585749462



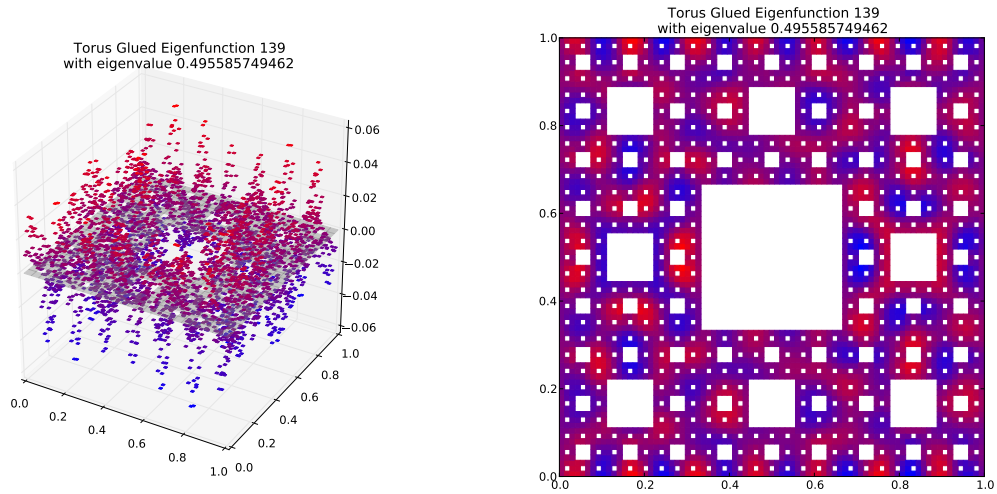
Compare to  $m = 3$  eigenspace with eigenvalue 2.75311290561  
(Note: Eigenspace Dimension  $> 1$ )



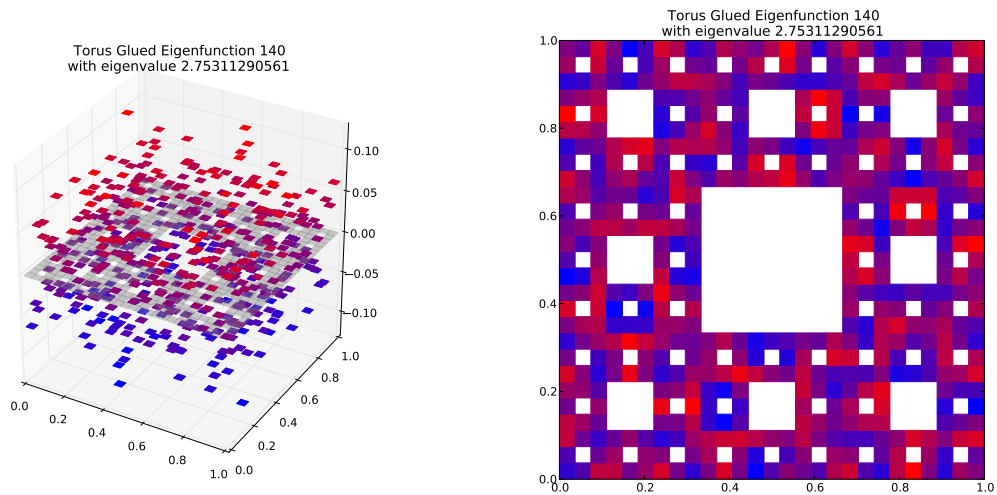
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.180009235528$   
Dot Value: 0.07209063322529663

# 140 $M = 4$ Eigenfunction 139

$M = 4$  Eigenfunction 139 has eigenvalue 0.495585749462



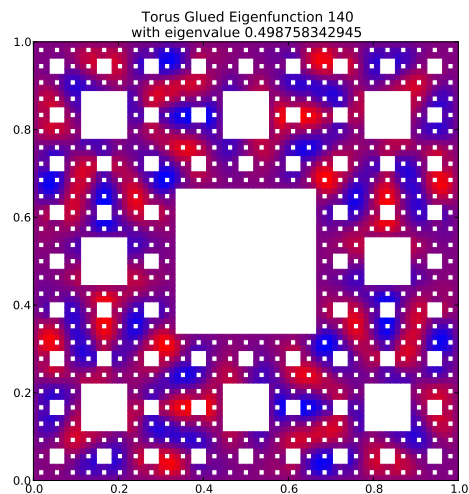
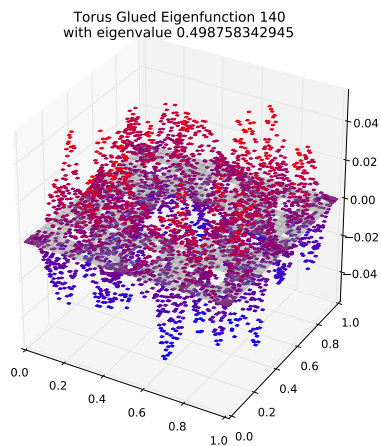
Compare to  $m = 3$  eigenspace with eigenvalue 2.75311290561  
(Note: Eigenspace Dimension  $> 1$ )



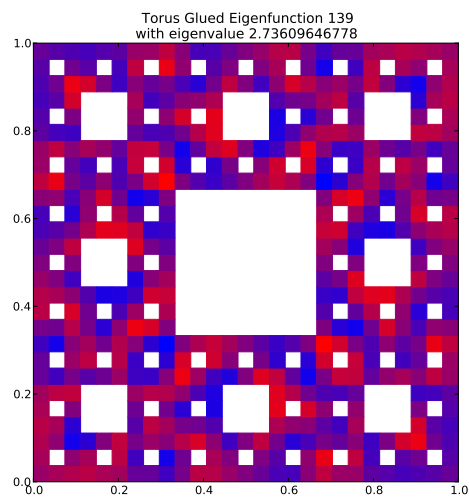
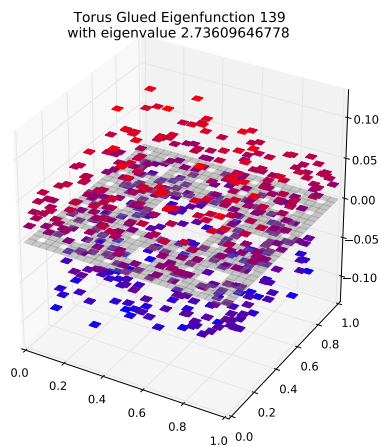
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.180009235528$   
Dot Value: 0.07209063322528841

# 141 $M = 4$ Eigenfunction 140

$M = 4$  Eigenfunction 140 has eigenvalue 0.498758342945



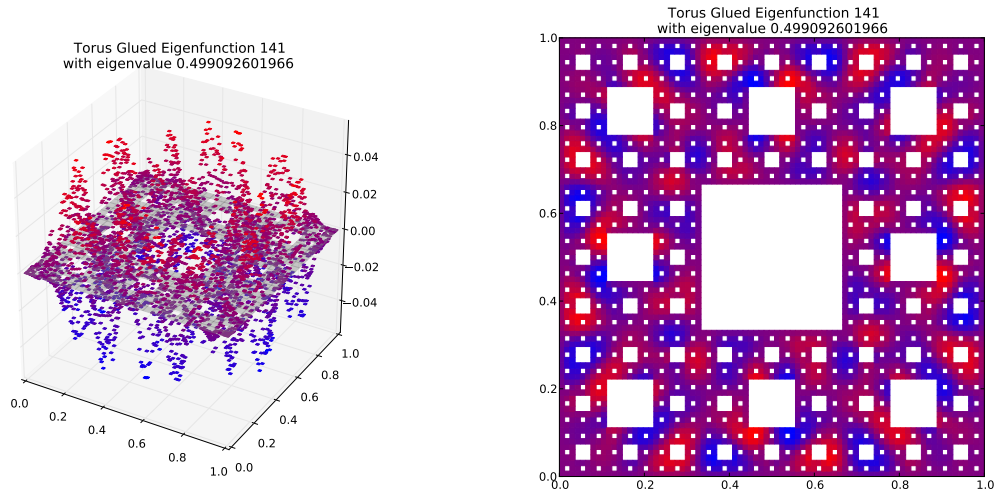
Compare to  $m = 3$  eigenspace with eigenvalue 2.73609646778



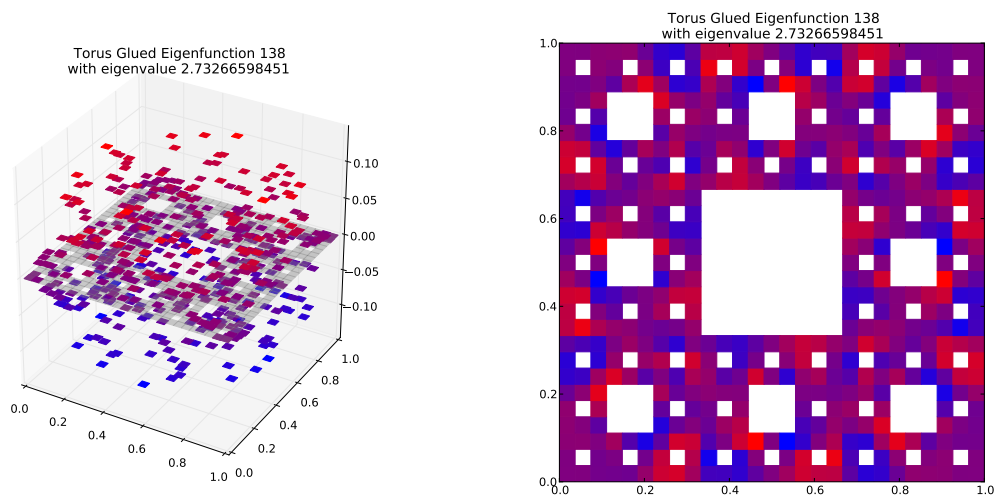
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.182288288742$   
Dot Value: 0.15408771963431012

## 142 $M = 4$ Eigenfunction 141

$M = 4$  Eigenfunction 141 has eigenvalue 0.499092601966



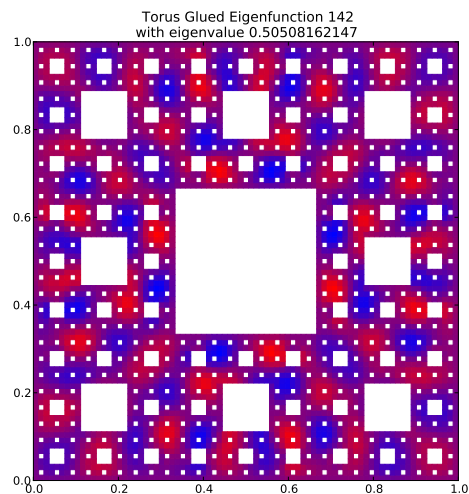
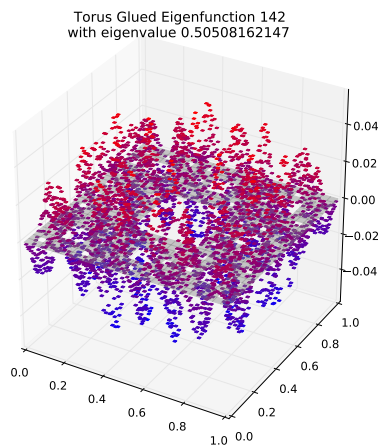
Compare to  $m = 3$  eigenspace with eigenvalue 2.73266598451



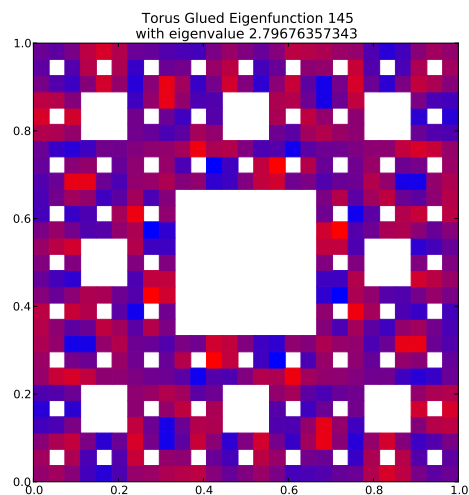
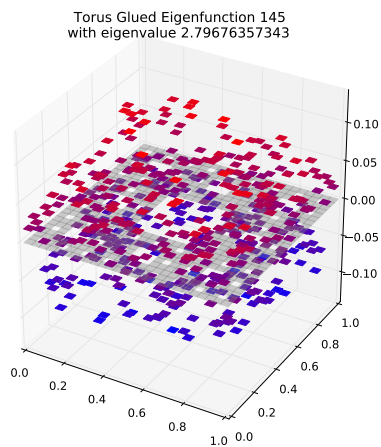
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.182639446166$   
Dot Value: 0.04192305396088025

# 143 $M = 4$ Eigenfunction 142

$M = 4$  Eigenfunction 142 has eigenvalue 0.50508162147



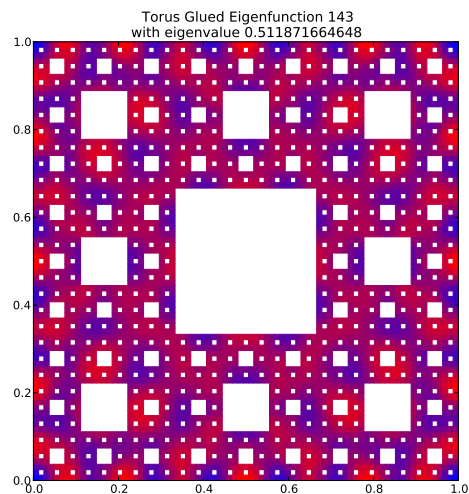
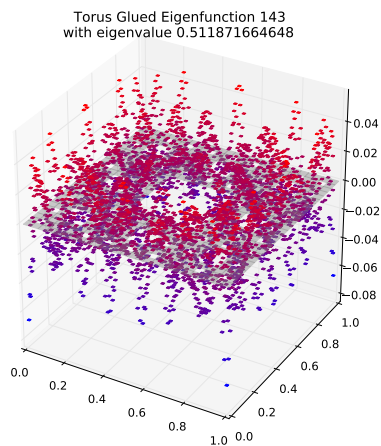
Compare to  $m = 3$  eigenspace with eigenvalue 2.79676357343



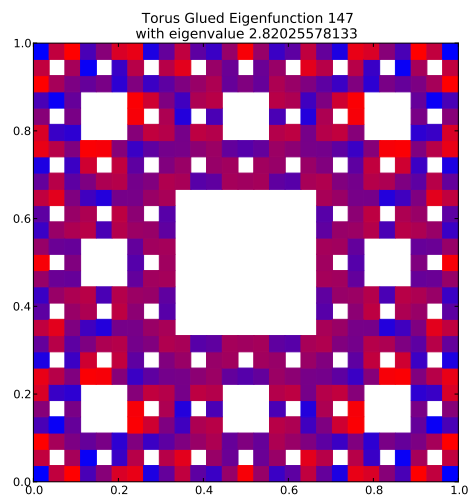
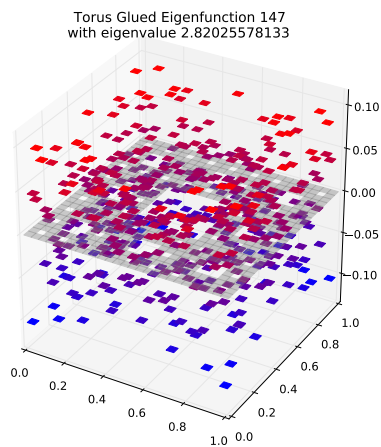
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.18059503716$   
Dot Value: 0.10993032587773488

# 144 $M = 4$ Eigenfunction 143

$M = 4$  Eigenfunction 143 has eigenvalue 0.511871664648



Compare to  $m = 3$  eigenspace with eigenvalue 2.82025578133



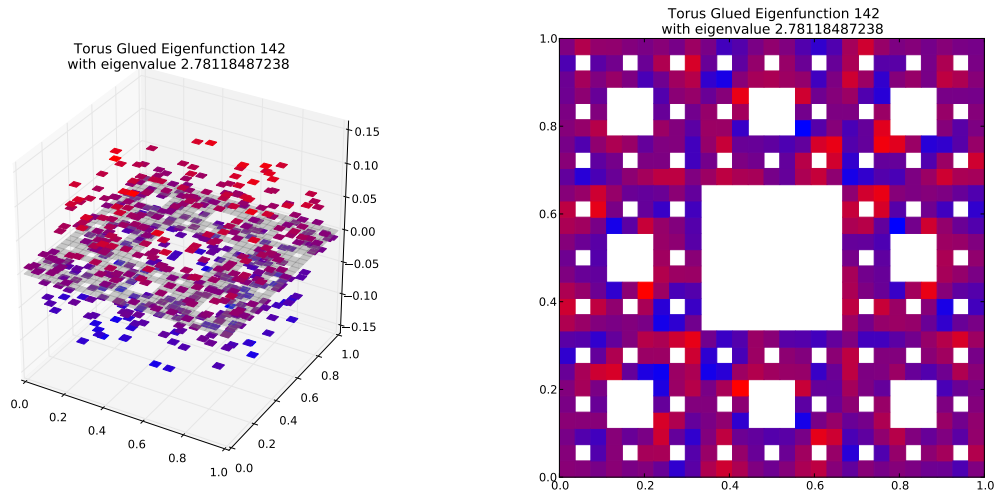
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.181498312329$   
Dot Value: 0.08661378380202256

# 145 $M = 4$ Eigenfunction 144

$M = 4$  Eigenfunction 144 has eigenvalue 0.512379158943



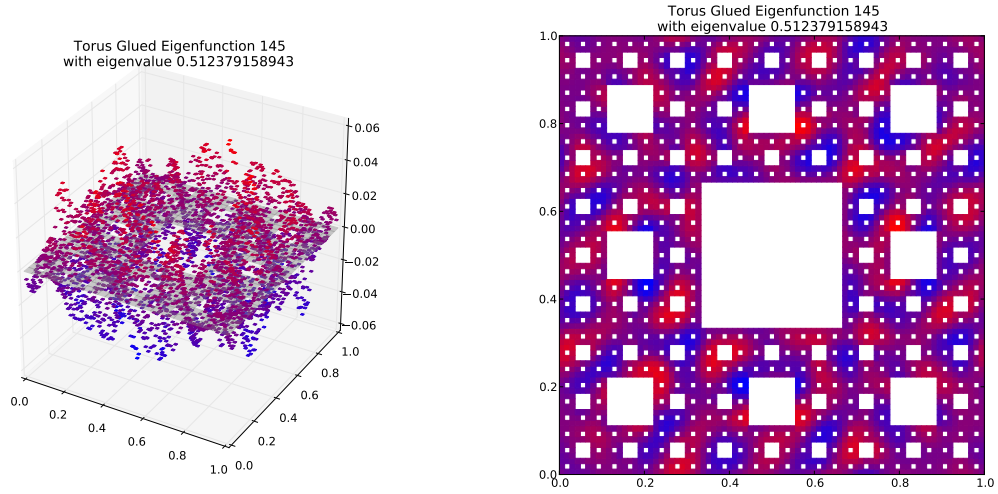
Compare to  $m = 3$  eigenspace with eigenvalue 2.78118487238  
(Note: Eigenspace Dimension  $> 1$ )



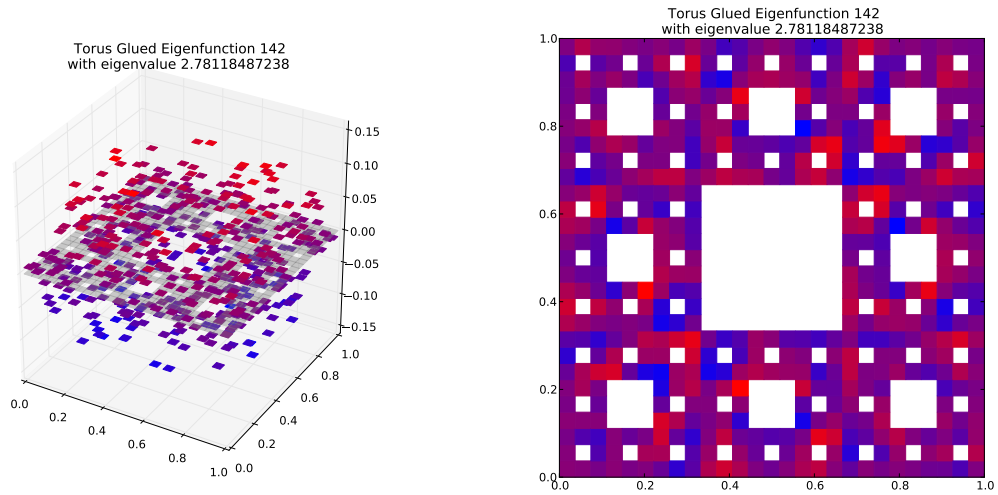
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.184230528517$   
Dot Value: 0.06947023315679346

# 146 $M = 4$ Eigenfunction 145

$M = 4$  Eigenfunction 145 has eigenvalue 0.512379158943



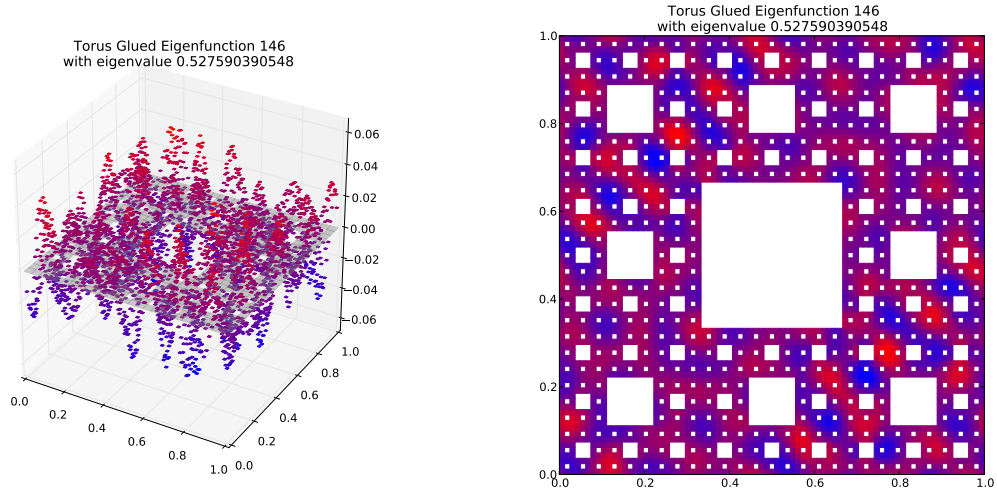
Compare to  $m = 3$  eigenspace with eigenvalue 2.78118487238  
(Note: Eigenspace Dimension  $> 1$ )



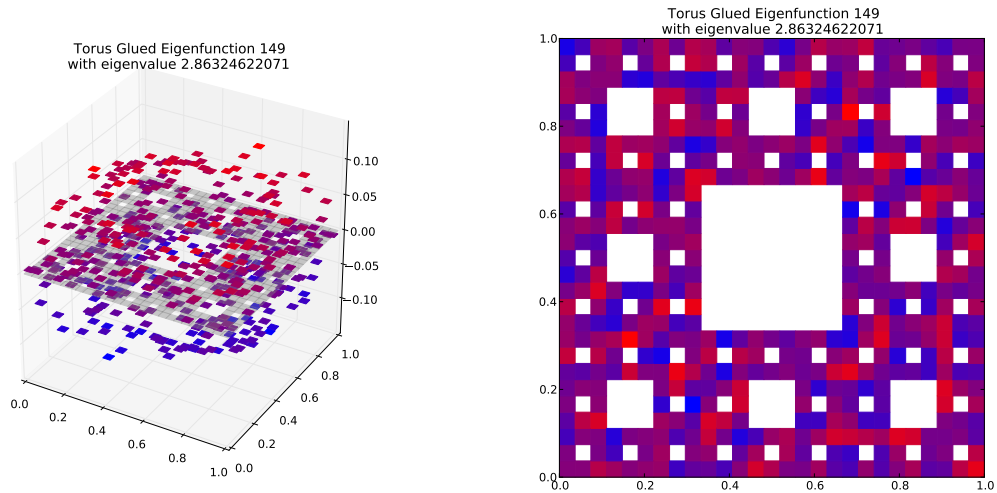
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.184230528517$   
Dot Value: 0.06947023315679857

# 147 $M = 4$ Eigenfunction 146

$M = 4$  Eigenfunction 146 has eigenvalue 0.527590390548



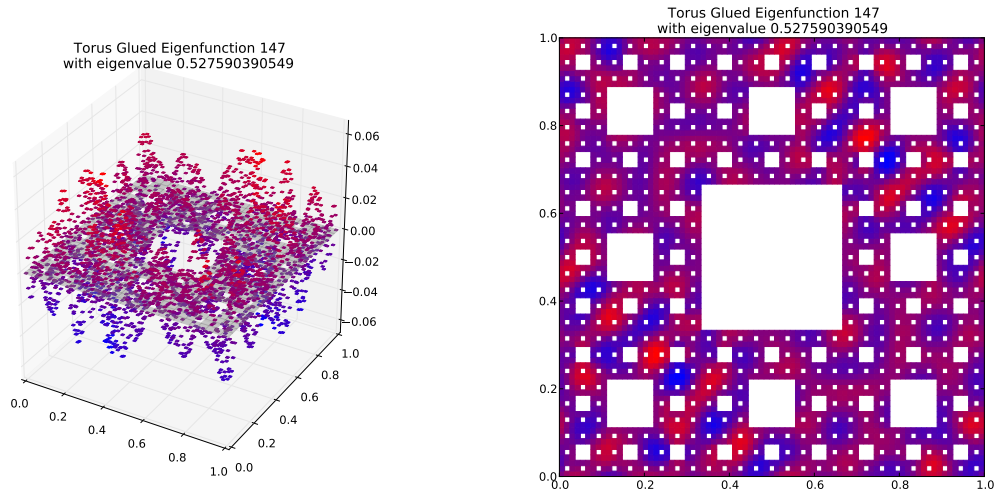
Compare to  $m = 3$  eigenspace with eigenvalue 2.86324622071  
(Note: Eigenspace Dimension  $> 1$ )



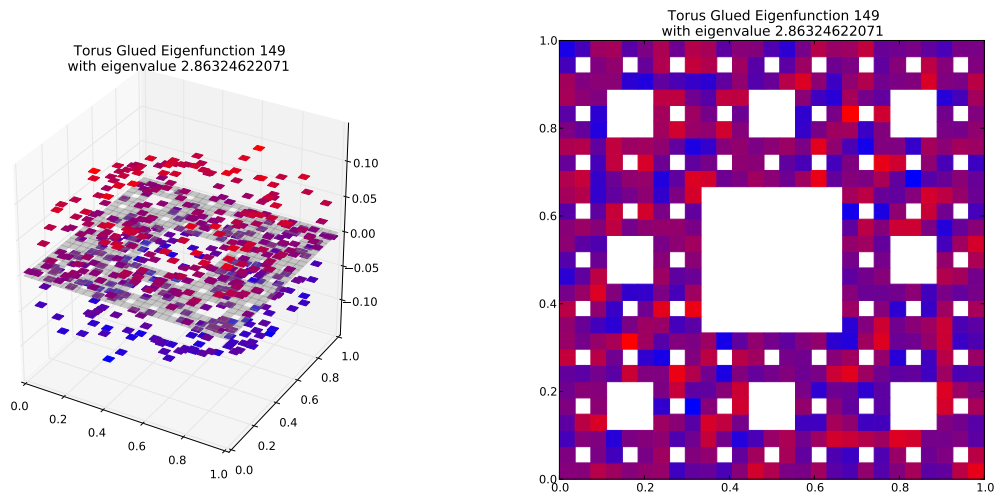
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.184263018225$   
Dot Value: 0.3216421162076726

# 148 $M = 4$ Eigenfunction 147

$M = 4$  Eigenfunction 147 has eigenvalue 0.527590390549



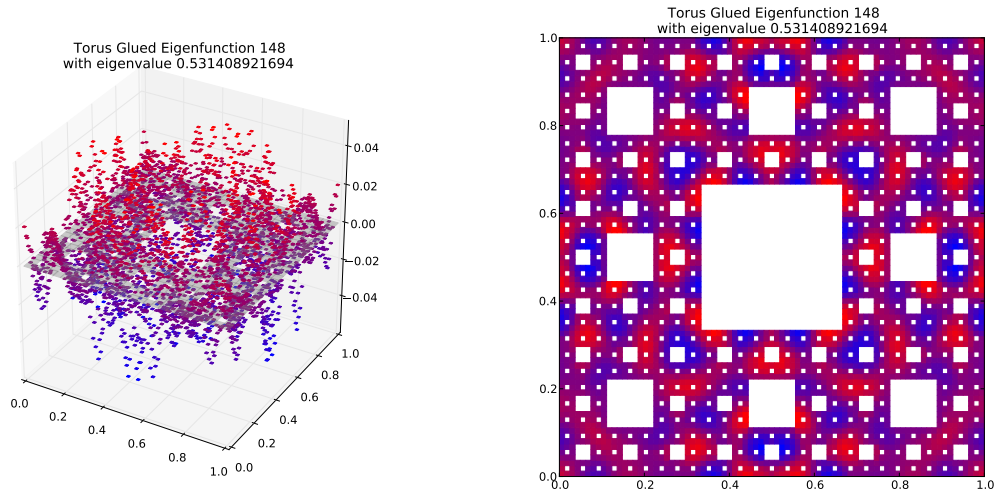
Compare to  $m = 3$  eigenspace with eigenvalue 2.86324622071  
(Note: Eigenspace Dimension  $> 1$ )



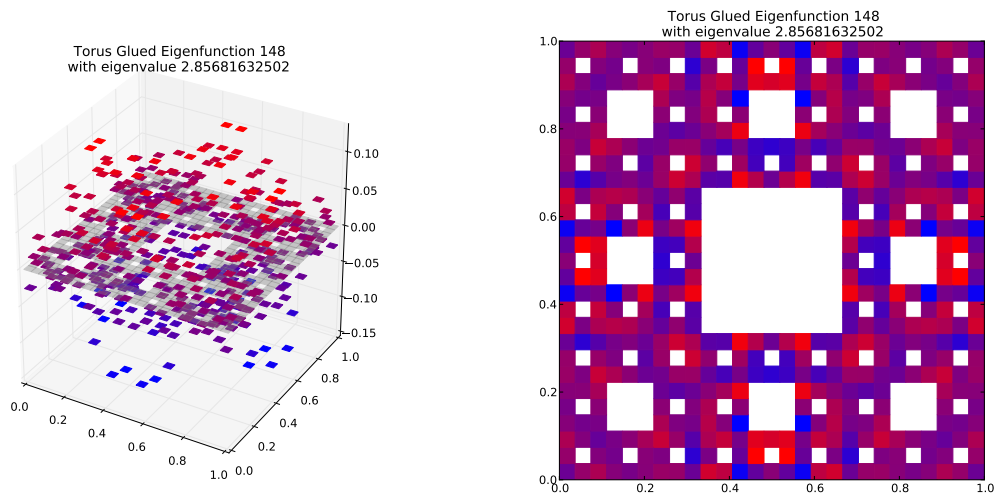
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.184263018225$   
Dot Value: 0.3216421162076277

# 149 $M = 4$ Eigenfunction 148

$M = 4$  Eigenfunction 148 has eigenvalue 0.531408921694



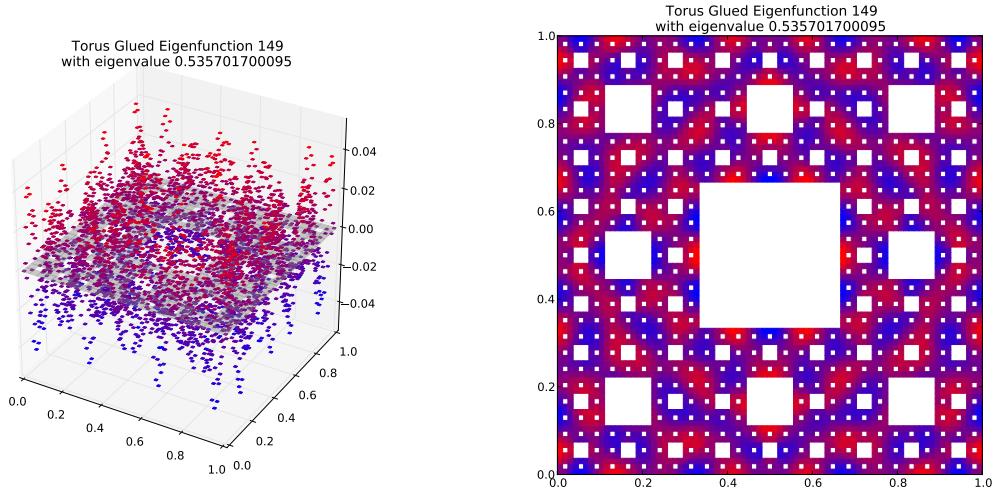
Compare to  $m = 3$  eigenspace with eigenvalue 2.85681632502



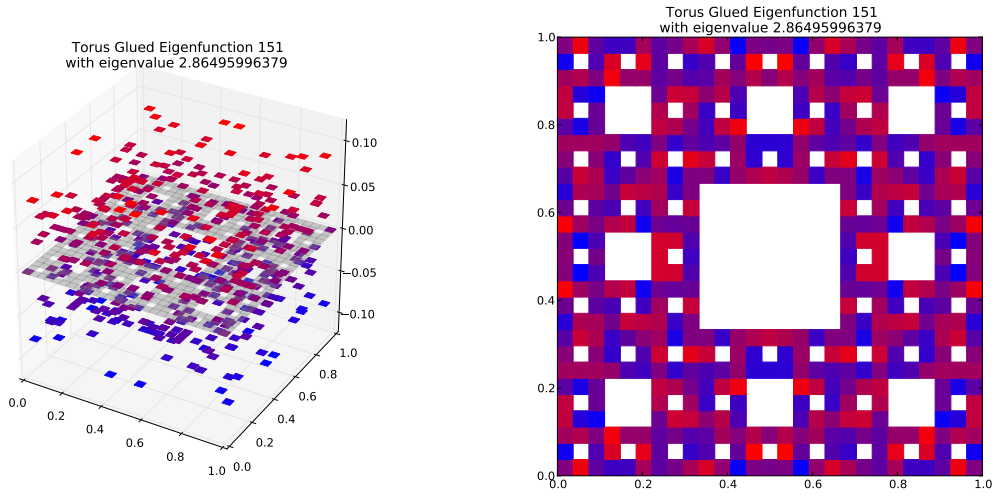
Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.186014381478$   
Dot Value: 0.10618494026030945

# 150 $M = 4$ Eigenfunction 149

$M = 4$  Eigenfunction 149 has eigenvalue 0.535701700095



Compare to  $m = 3$  eigenspace with eigenvalue 2.86495996379



Eigenvalue Ratio:  $\lambda_4/\lambda_3 = 0.186984009154$   
Dot Value: 0.2325743014471786