

Off-Diagonal Dirichlet Heat Kernel for  $M = 4$   
with Klein Bottle Horizontal Identifications

SPUR 2016

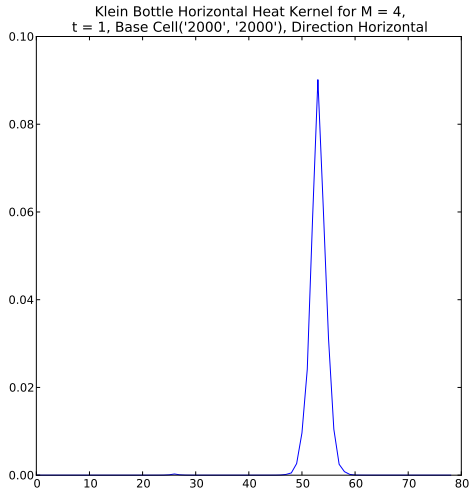
August 2, 2016

**Note:** All negative values with absolute value  $< 1 \times 10^{-10}$  were treated as  $e^{-35}$ . No negative values with absolute value  $\geq 1 \times 10^{-10}$  were encountered.

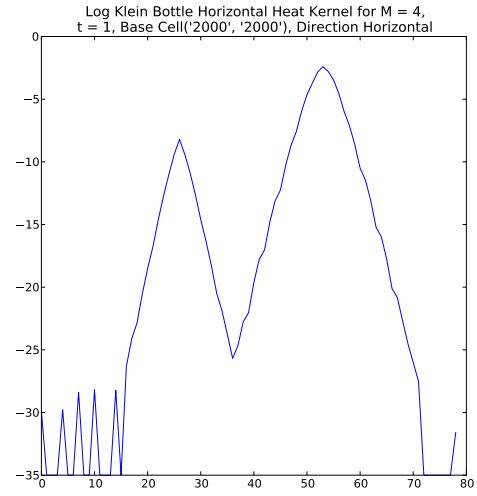
# 1 Base Cell('2000', '2000')

## 1.1 $t = 1$ Horizontal

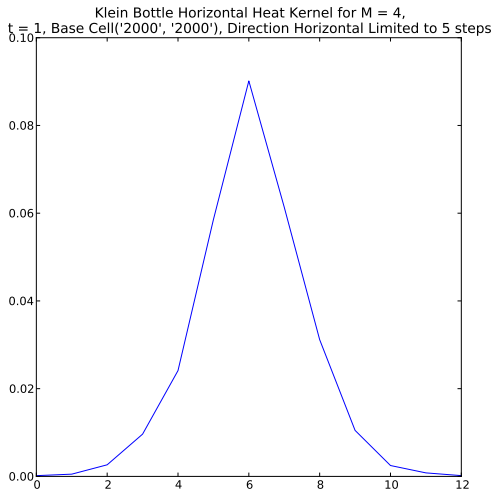
(Regular) Horizontal



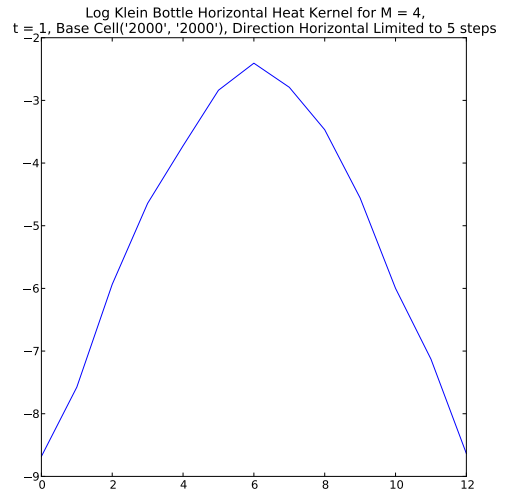
(Log) Horizontal



(Regular — Zoomed) Horizontal

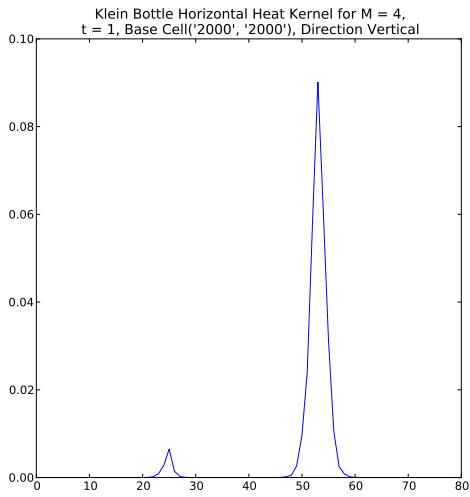


(Log — Zoomed) Horizontal

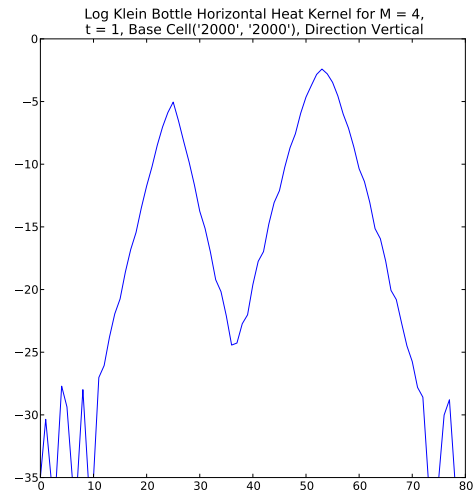


## 1.2 $t = 1$ Vertical

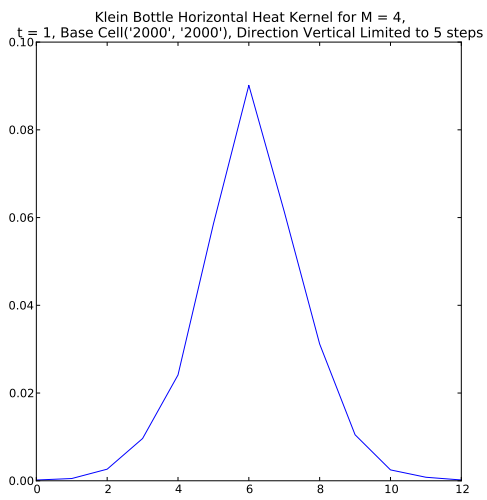
(Regular) Vertical



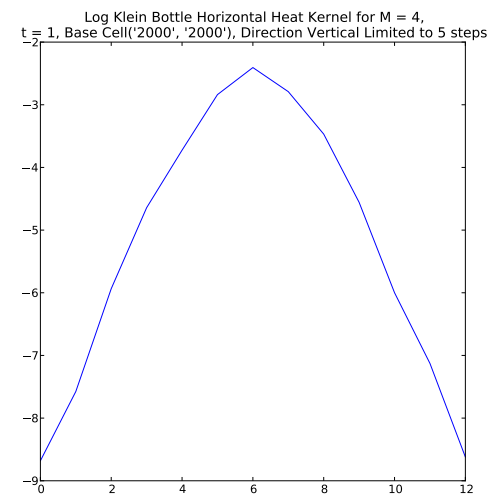
(Log) Vertical



(Regular — Zoomed) Vertical

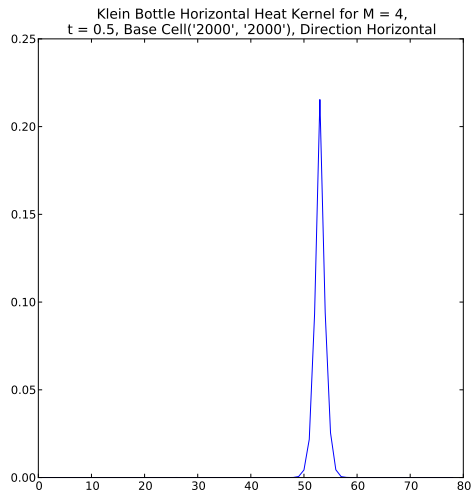


(Log — Zoomed) Vertical

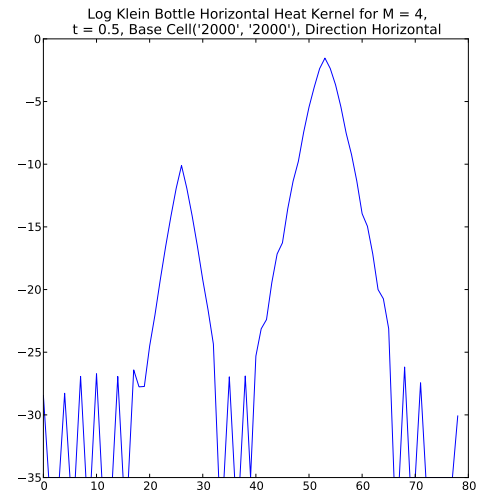


### 1.3 $t = 0.5$ Horizontal

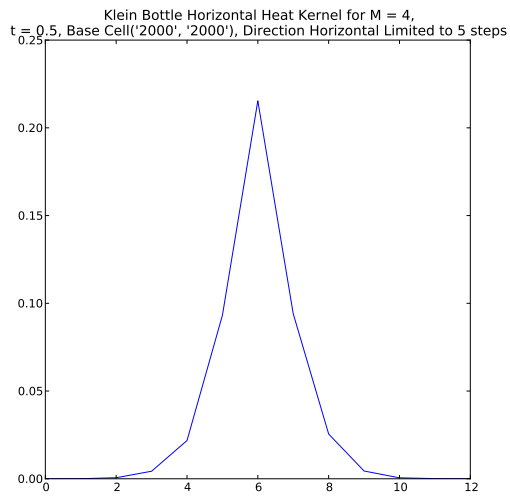
(Regular) Horizontal



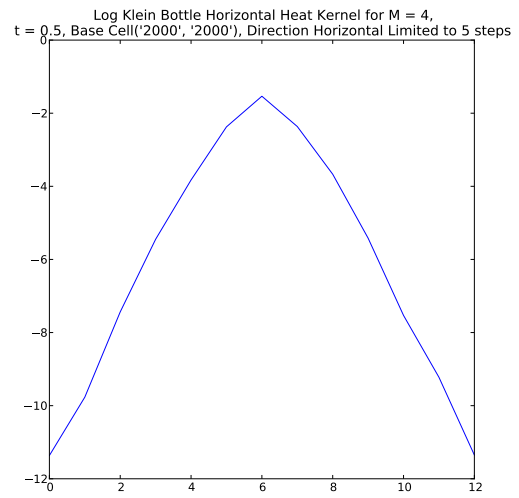
(Log) Horizontal



(Regular — Zoomed) Horizontal

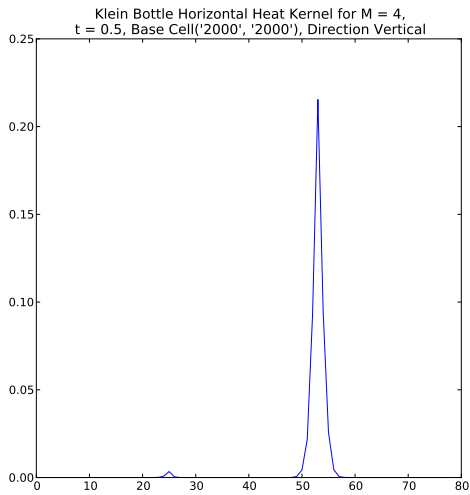


(Log — Zoomed) Horizontal

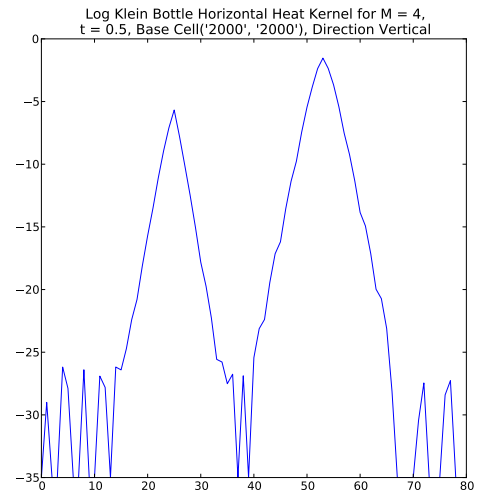


## 1.4 $t = 0.5$ Vertical

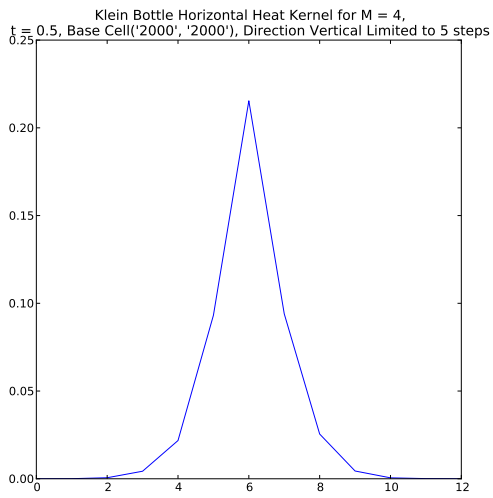
(Regular) Vertical



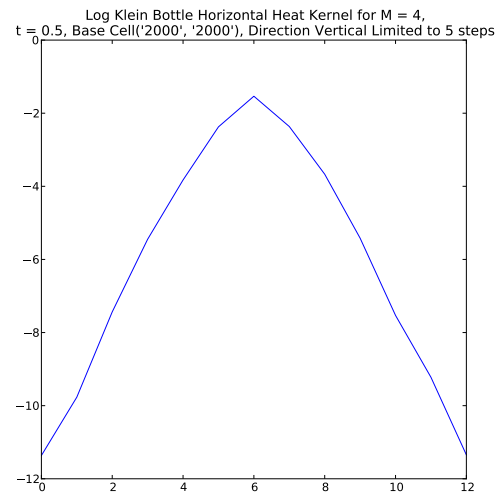
(Log) Vertical



(Regular — Zoomed) Vertical

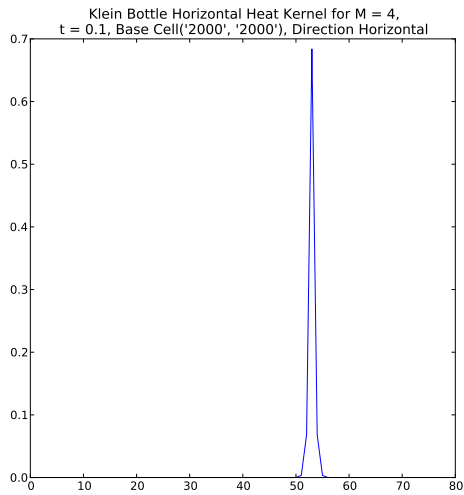


(Log — Zoomed) Vertical

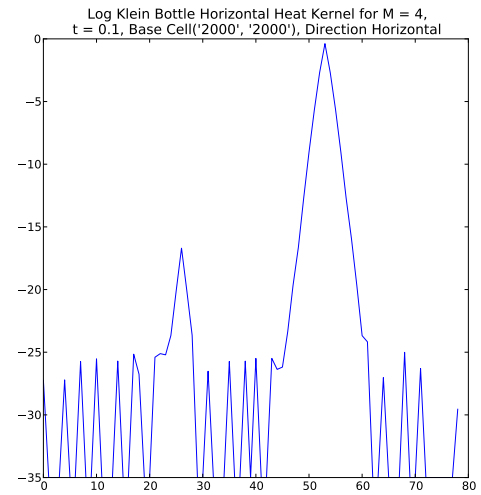


## 1.5 $t = 0.1$ Horizontal

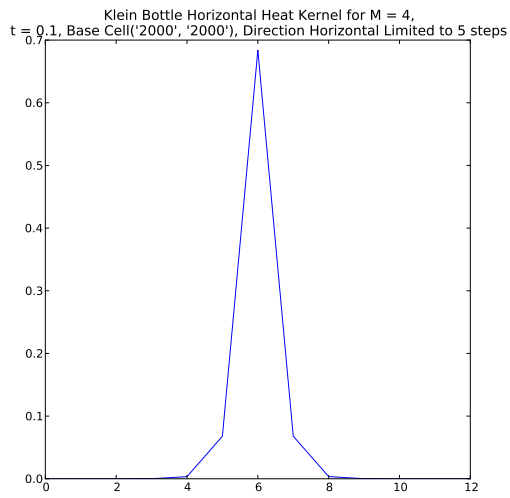
(Regular) Horizontal



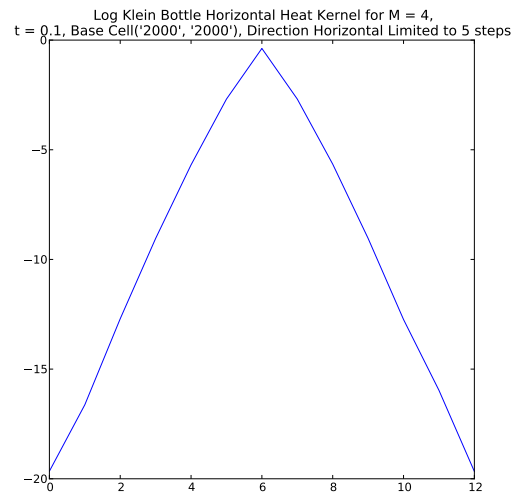
(Log) Horizontal



(Regular — Zoomed) Horizontal

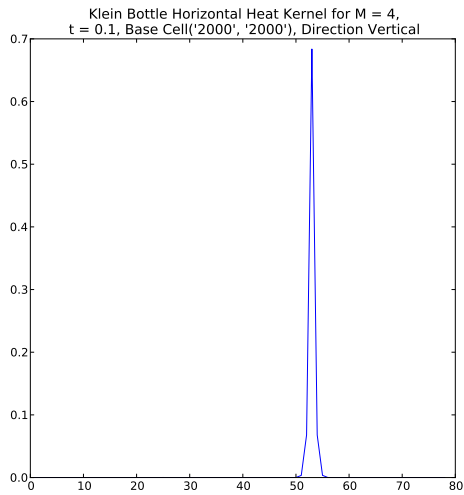


(Log — Zoomed) Horizontal

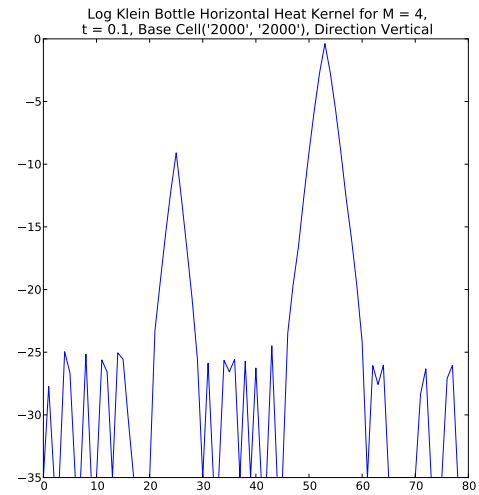


## 1.6 $t = 0.1$ Vertical

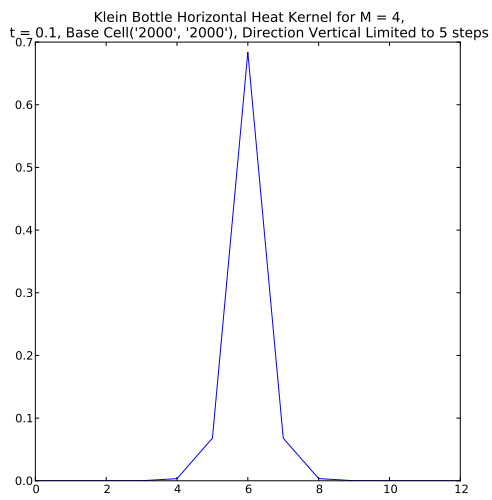
(Regular) Vertical



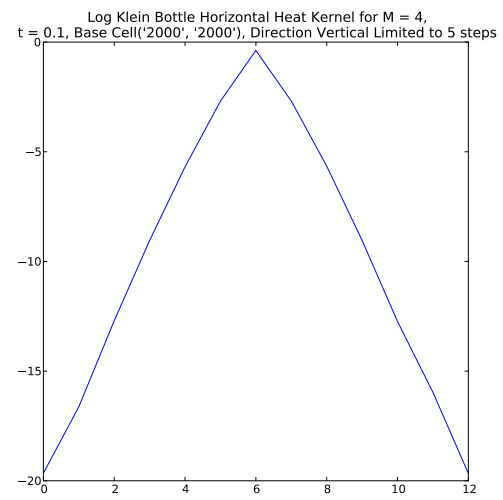
(Log) Vertical



(Regular — Zoomed) Vertical

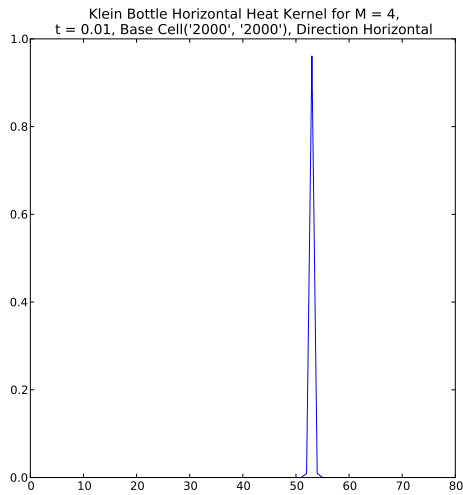


(Log — Zoomed) Vertical

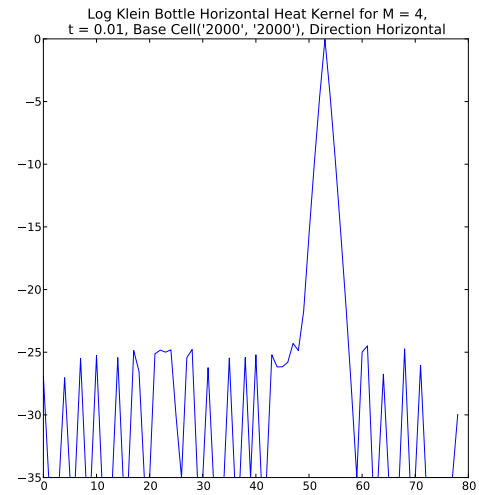


## 1.7 $t = 0.01$ Horizontal

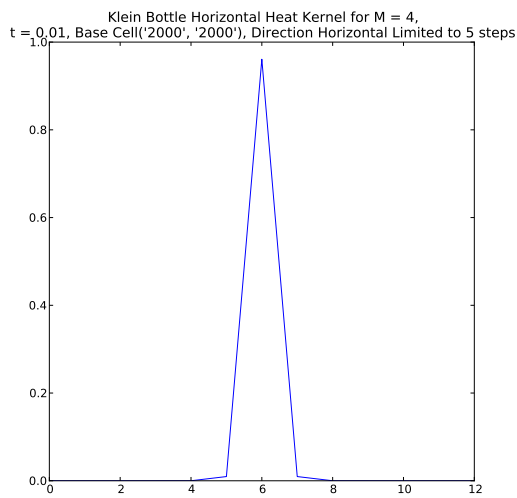
(Regular) Horizontal



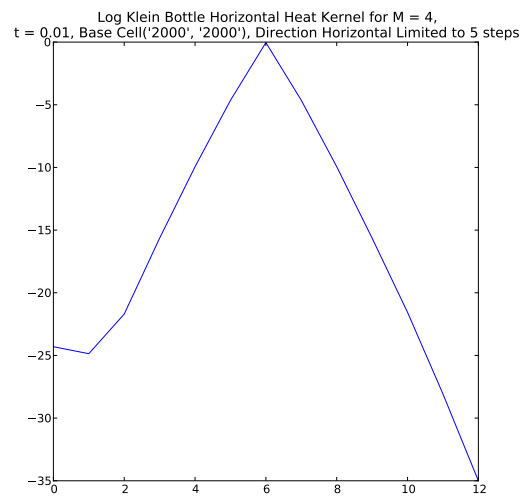
(Log) Horizontal



(Regular — Zoomed) Horizontal

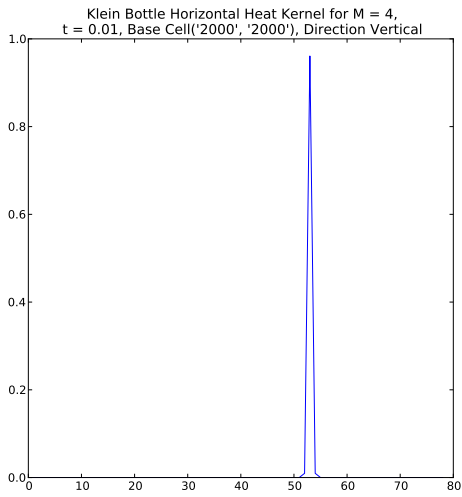


(Log — Zoomed) Horizontal

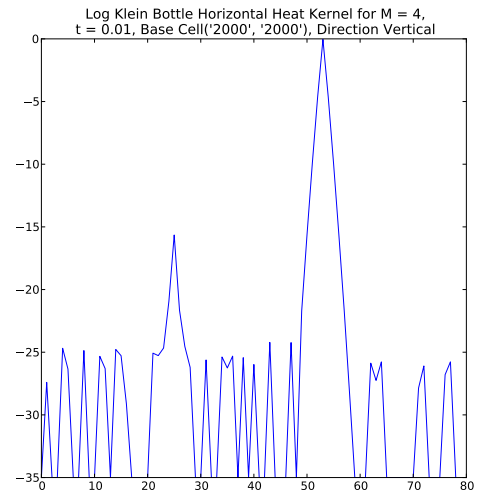


## 1.8 $t = 0.01$ Vertical

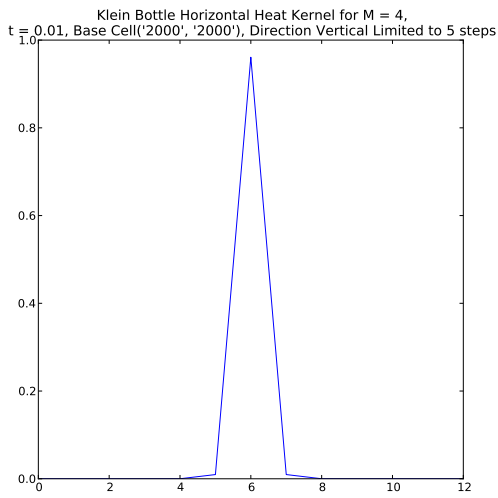
(Regular) Vertical



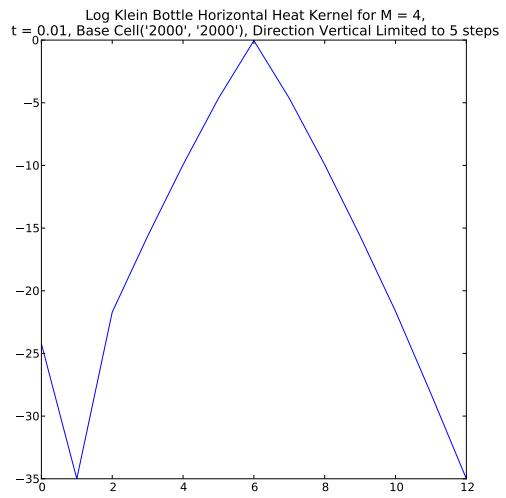
(Log) Vertical



(Regular — Zoomed) Vertical



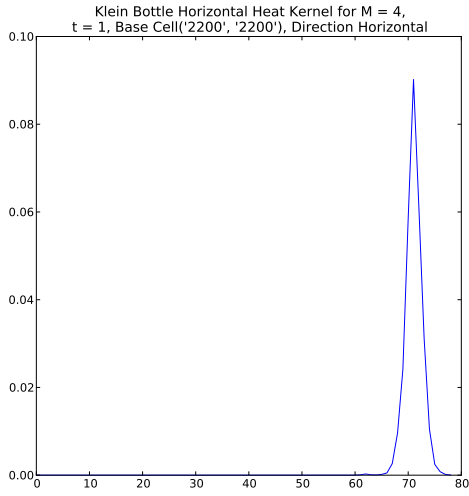
(Log — Zoomed) Vertical



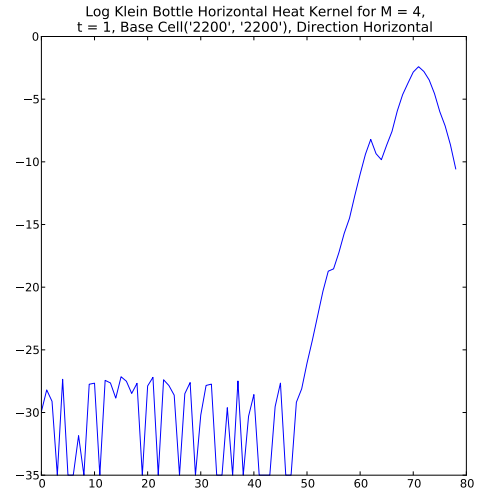
## 2 Base Cell('2200', '2200')

### 2.1 $t = 1$ Horizontal

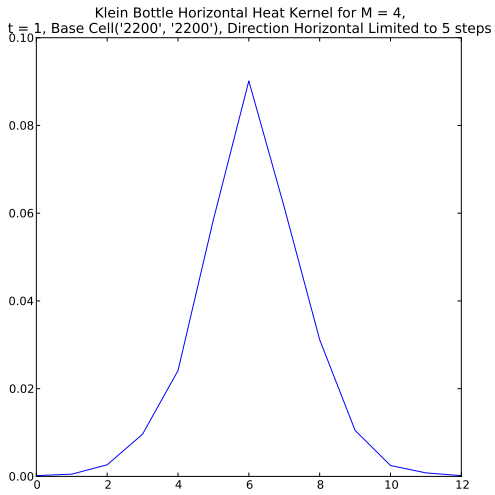
(Regular) Horizontal



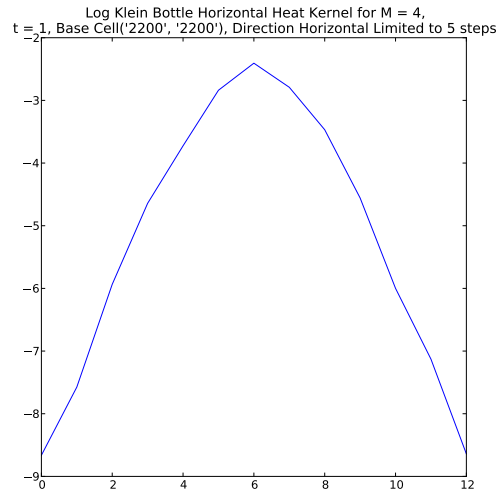
(Log) Horizontal



(Regular — Zoomed) Horizontal

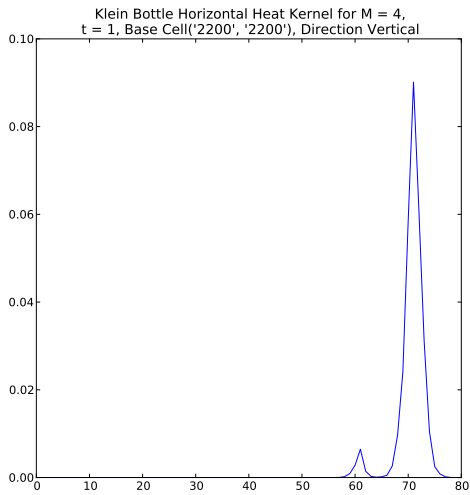


(Log — Zoomed) Horizontal

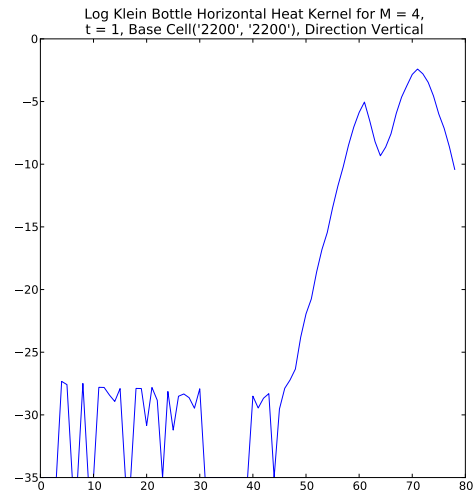


## 2.2 $t = 1$ Vertical

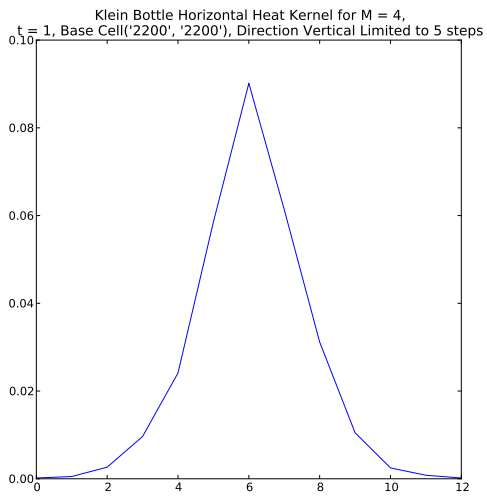
(Regular) Vertical



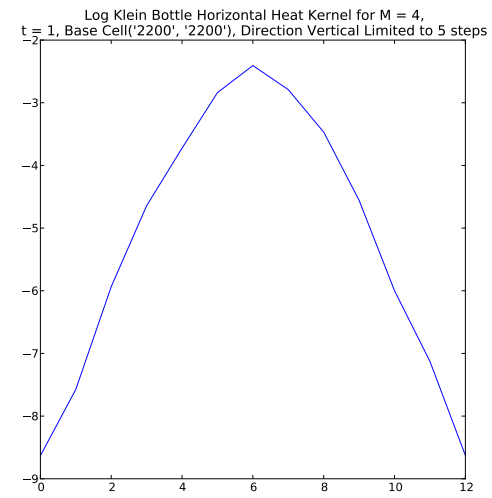
(Log) Vertical



(Regular — Zoomed) Vertical

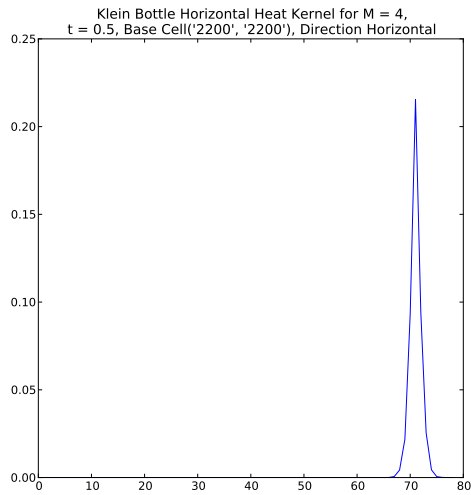


(Log — Zoomed) Vertical

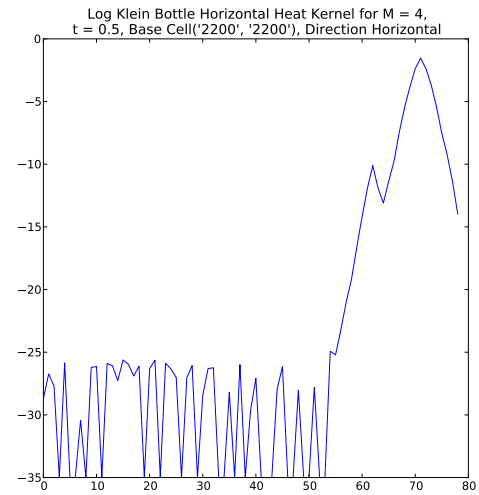


### 2.3 $t = 0.5$ Horizontal

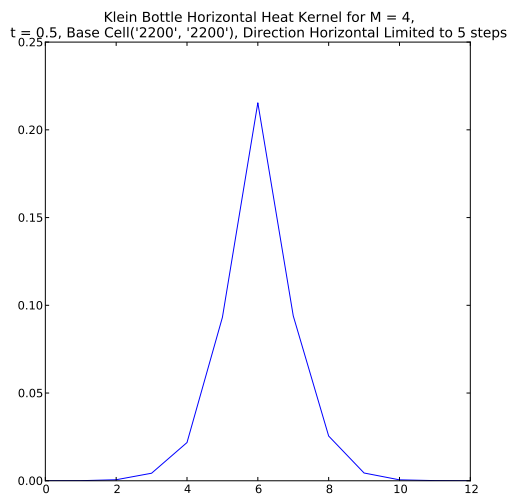
(Regular) Horizontal



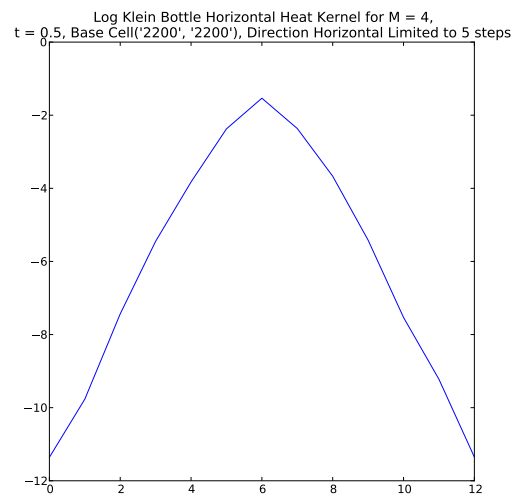
(Log) Horizontal



(Regular — Zoomed) Horizontal

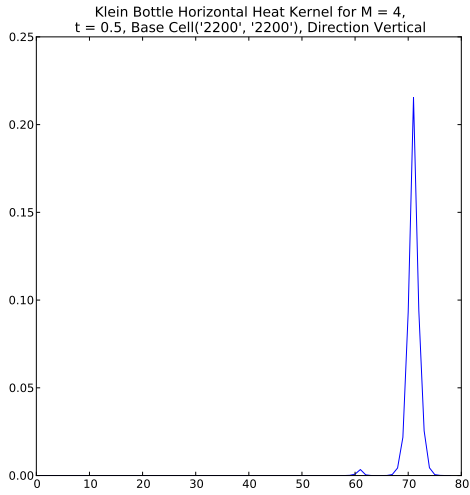


(Log — Zoomed) Horizontal

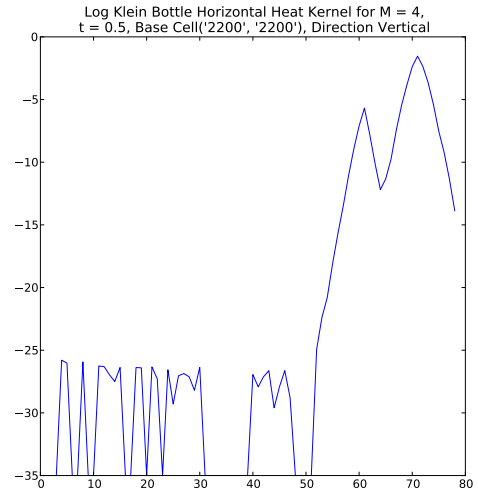


## 2.4 $t = 0.5$ Vertical

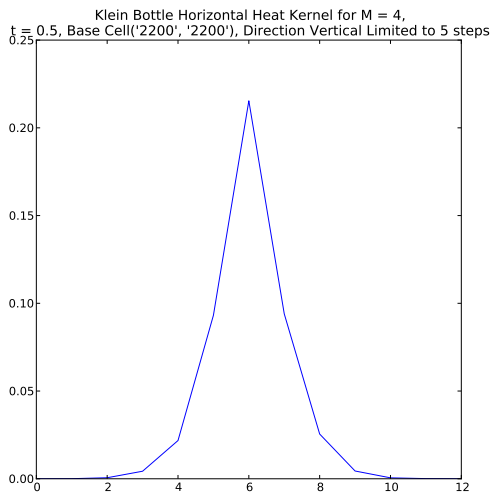
(Regular) Vertical



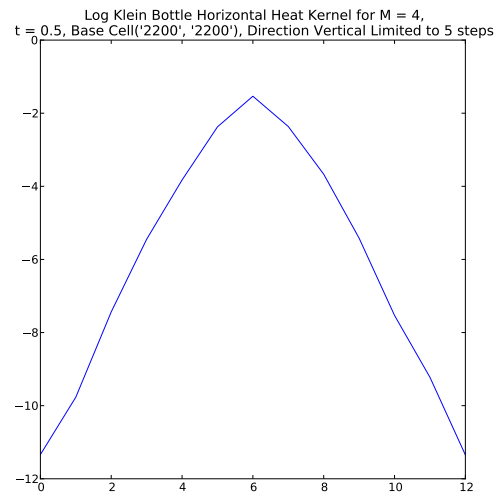
(Log) Vertical



(Regular — Zoomed) Vertical

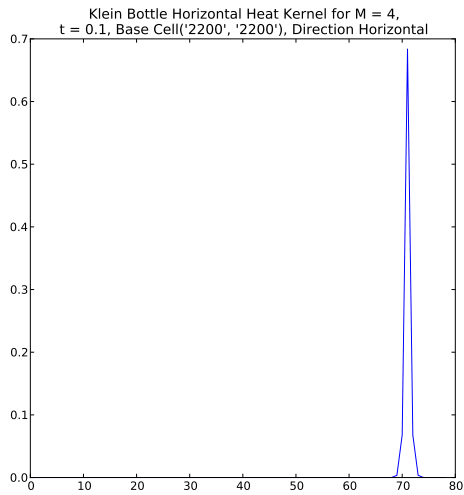


(Log — Zoomed) Vertical

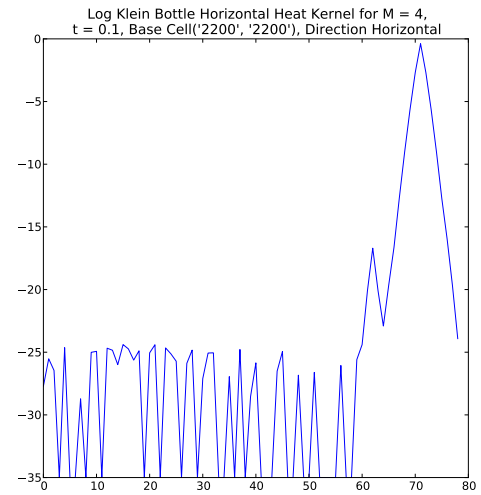


## 2.5 $t = 0.1$ Horizontal

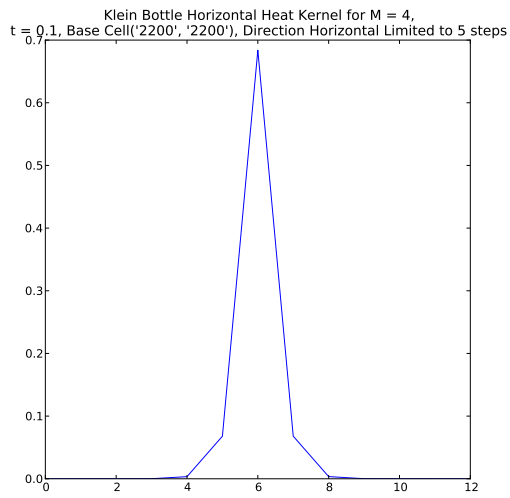
(Regular) Horizontal



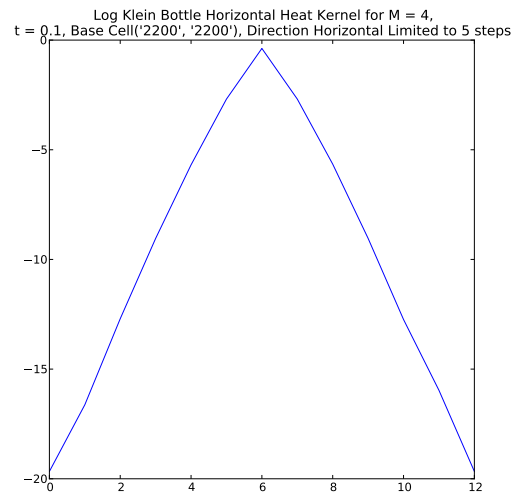
(Log) Horizontal



(Regular — Zoomed) Horizontal

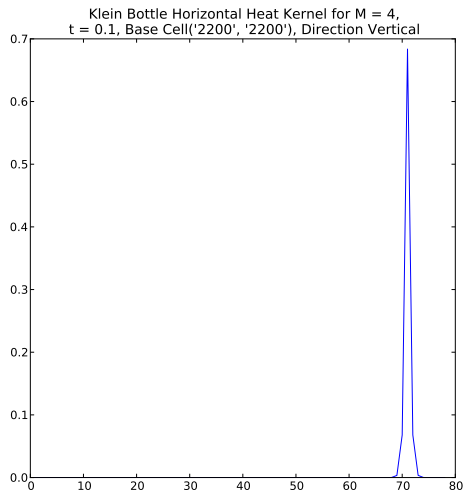


(Log — Zoomed) Horizontal

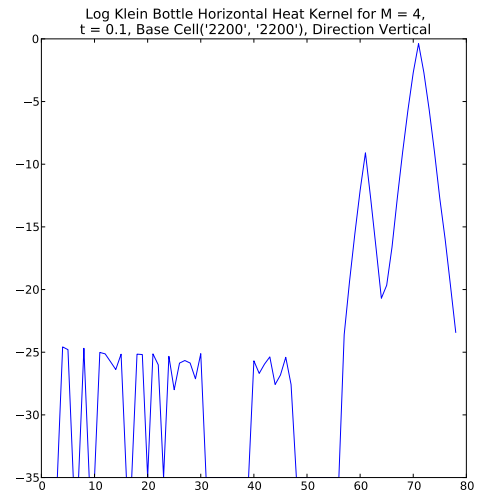


## 2.6 $t = 0.1$ Vertical

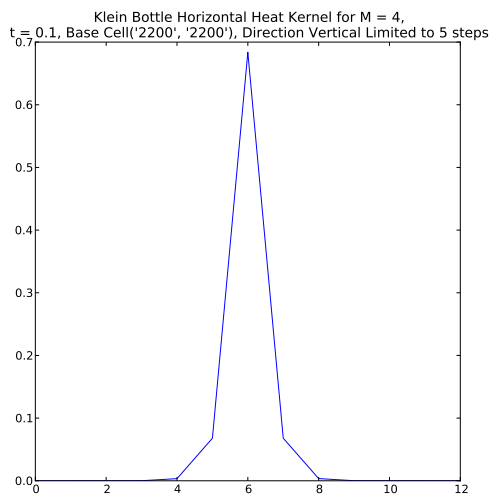
(Regular) Vertical



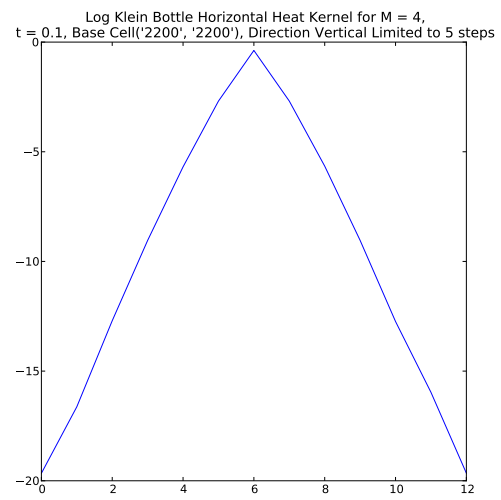
(Log) Vertical



(Regular — Zoomed) Vertical

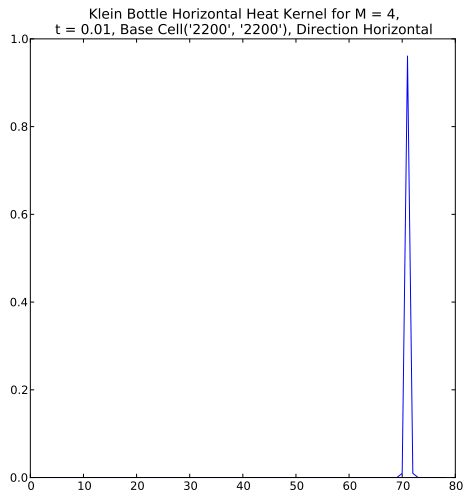


(Log — Zoomed) Vertical

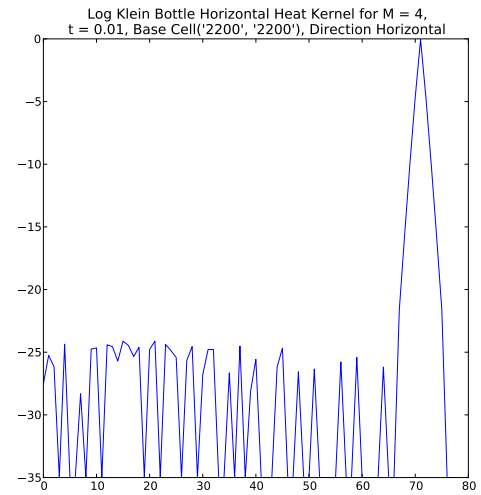


## 2.7 $t = 0.01$ Horizontal

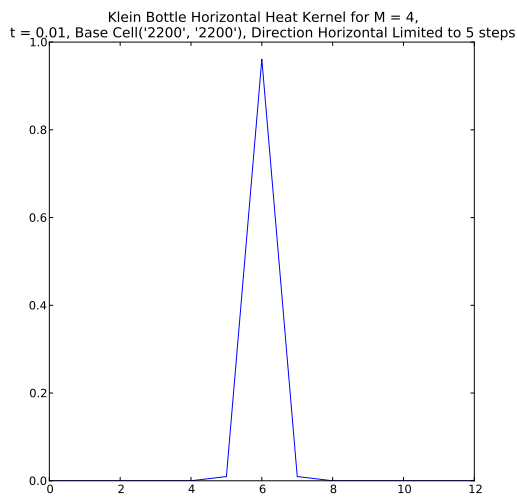
(Regular) Horizontal



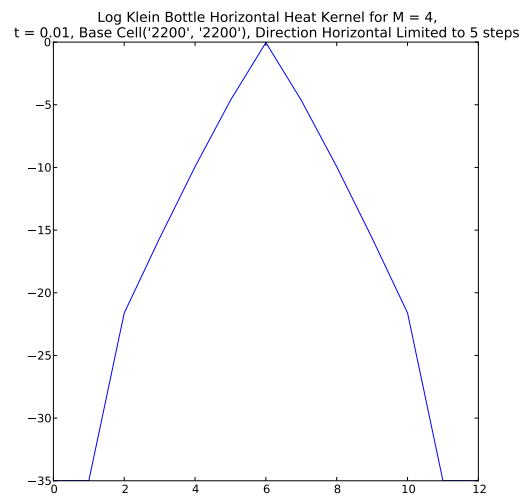
(Log) Horizontal



(Regular — Zoomed) Horizontal

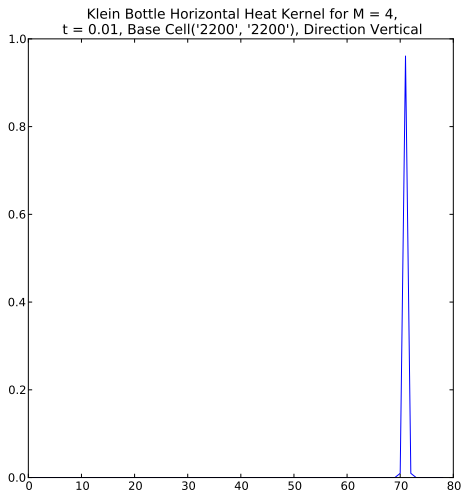


(Log — Zoomed) Horizontal

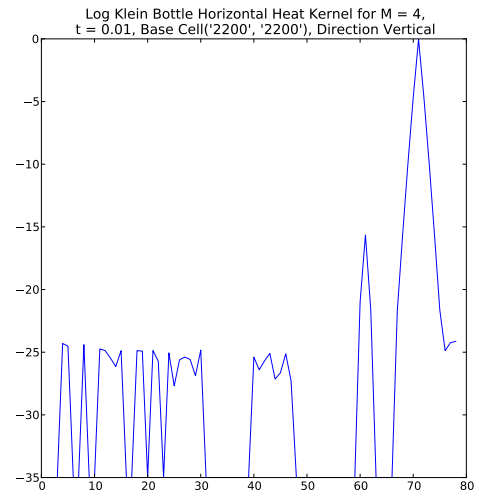


## 2.8 $t = 0.01$ Vertical

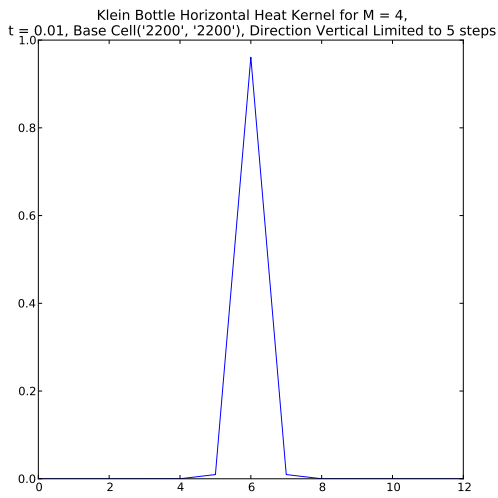
(Regular) Vertical



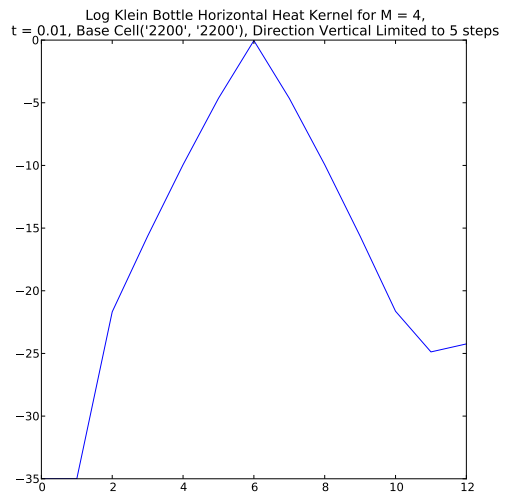
(Log) Vertical



(Regular — Zoomed) Vertical



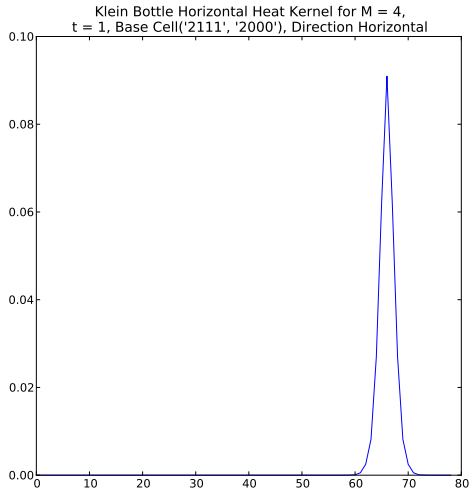
(Log — Zoomed) Vertical



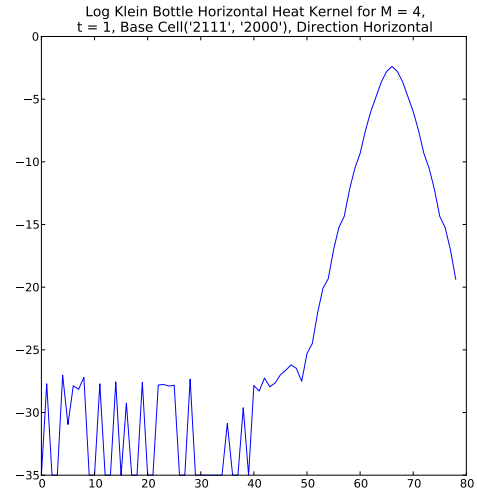
### 3 Base Cell('2111', '2000')

#### 3.1 $t = 1$ Horizontal

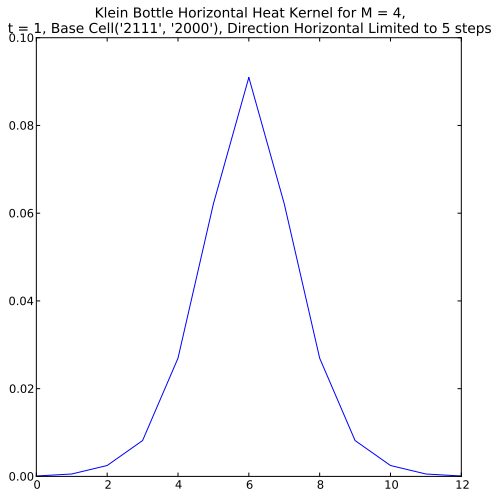
(Regular) Horizontal



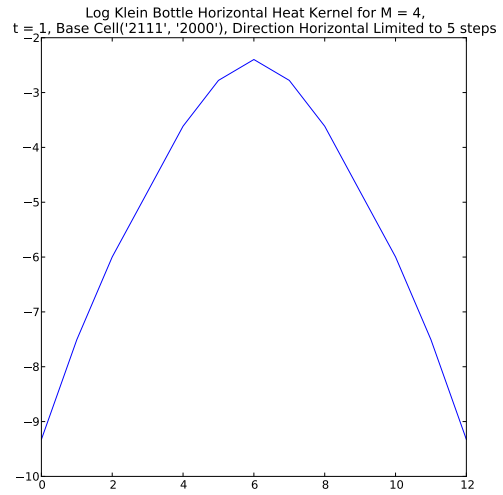
(Log) Horizontal



(Regular — Zoomed) Horizontal

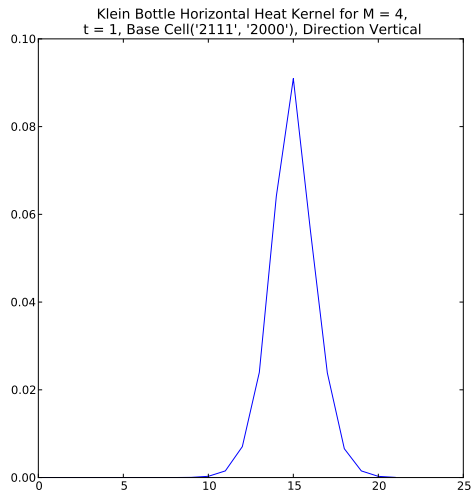


(Log — Zoomed) Horizontal

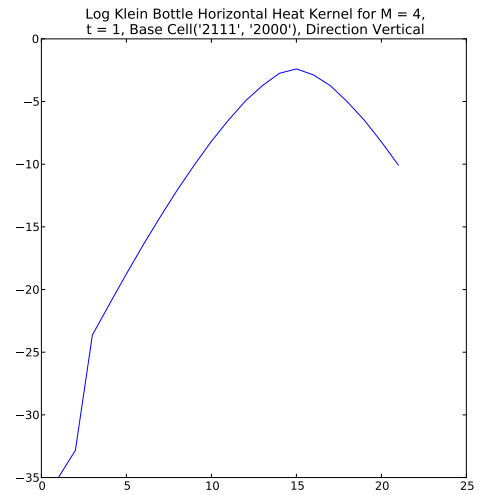


### 3.2 $t = 1$ Vertical

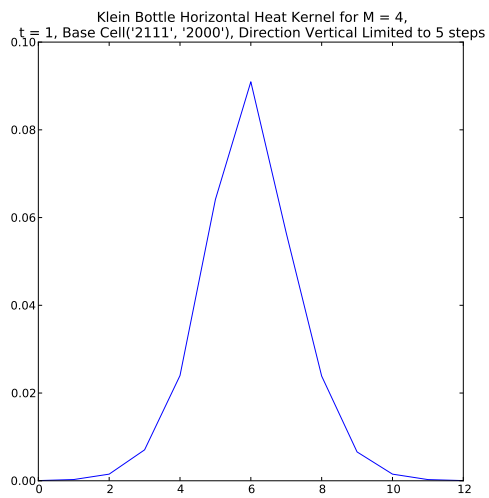
(Regular) Vertical



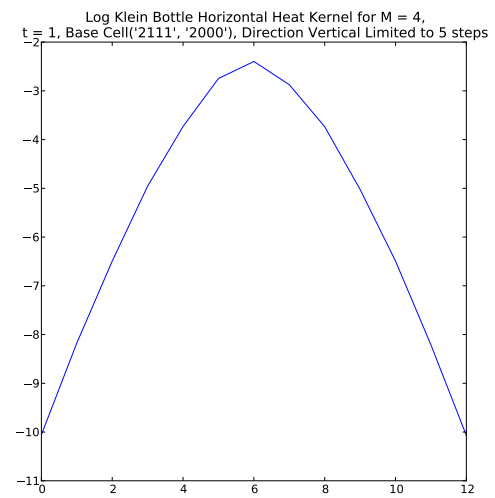
(Log) Vertical



(Regular — Zoomed) Vertical

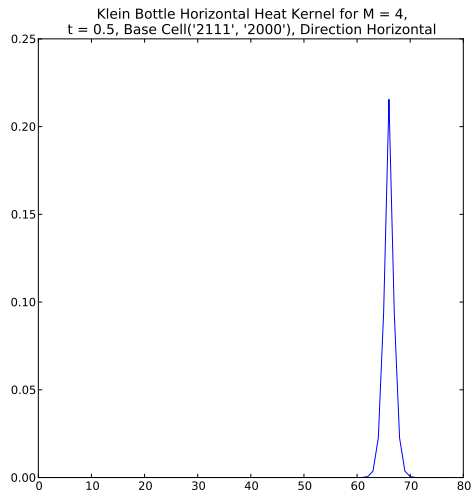


(Log — Zoomed) Vertical

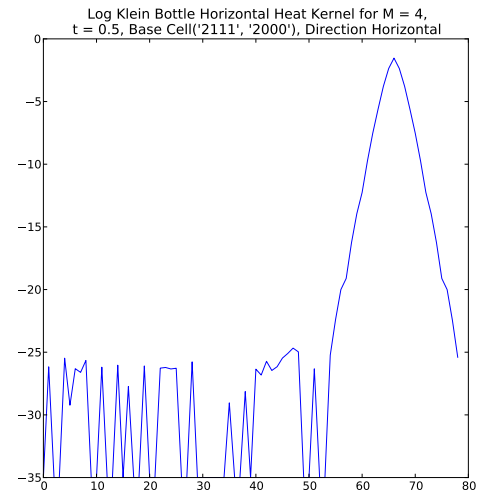


### 3.3 $t = 0.5$ Horizontal

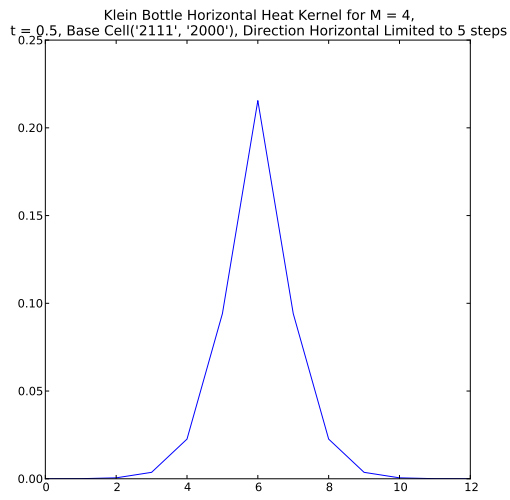
(Regular) Horizontal



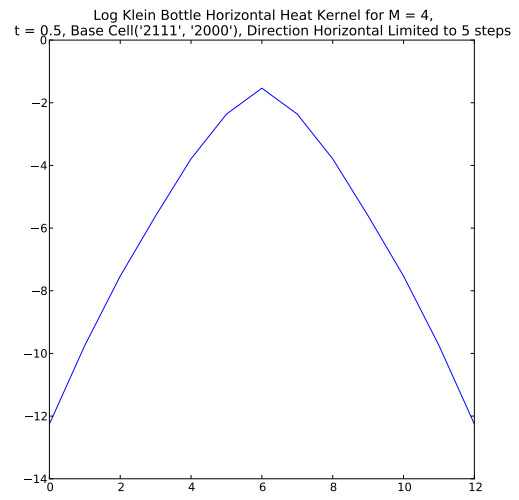
(Log) Horizontal



(Regular — Zoomed) Horizontal

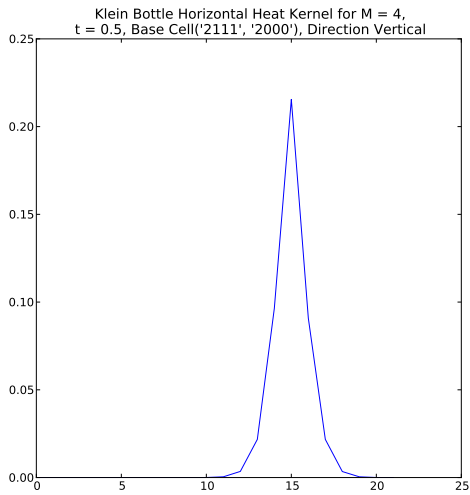


(Log — Zoomed) Horizontal

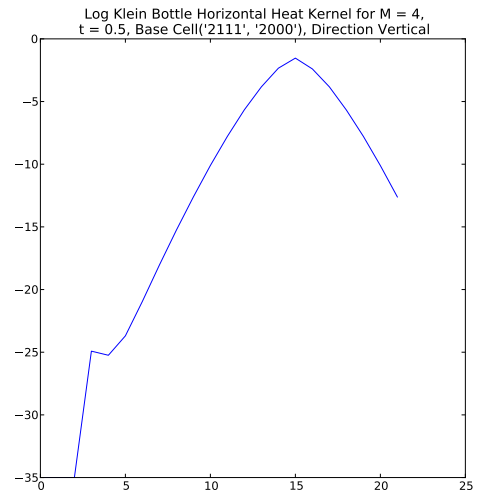


### 3.4 $t = 0.5$ Vertical

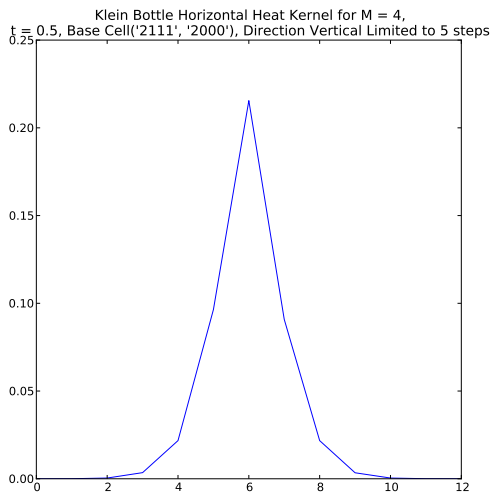
(Regular) Vertical



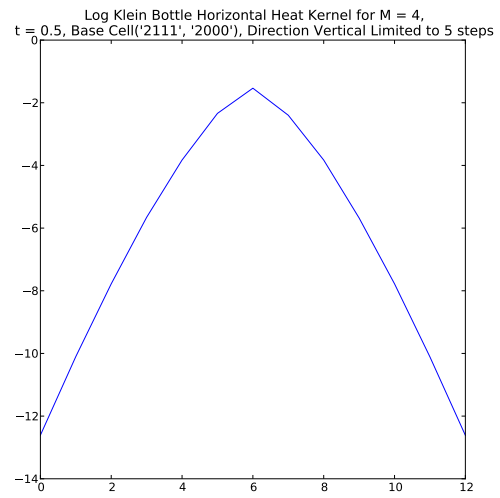
(Log) Vertical



(Regular — Zoomed) Vertical

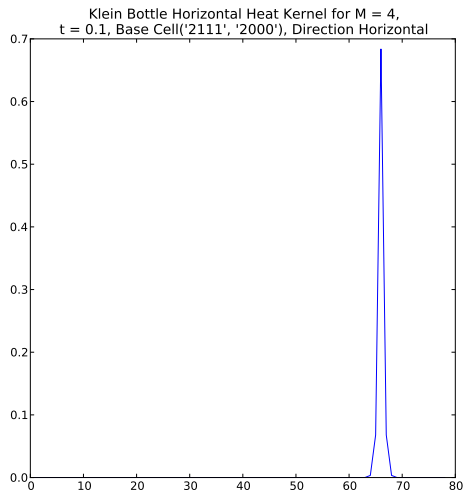


(Log — Zoomed) Vertical

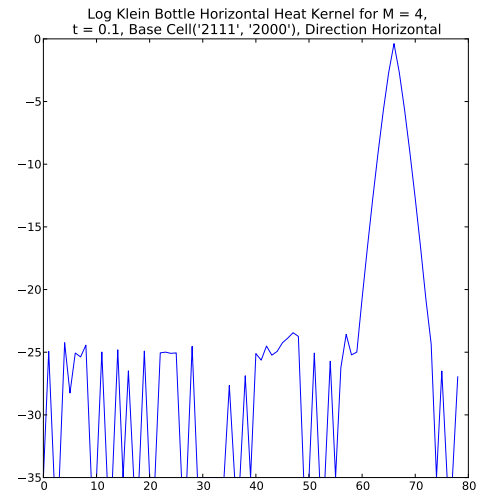


### 3.5 $t = 0.1$ Horizontal

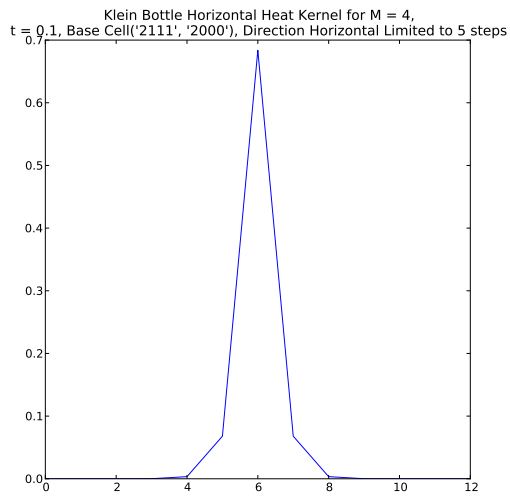
(Regular) Horizontal



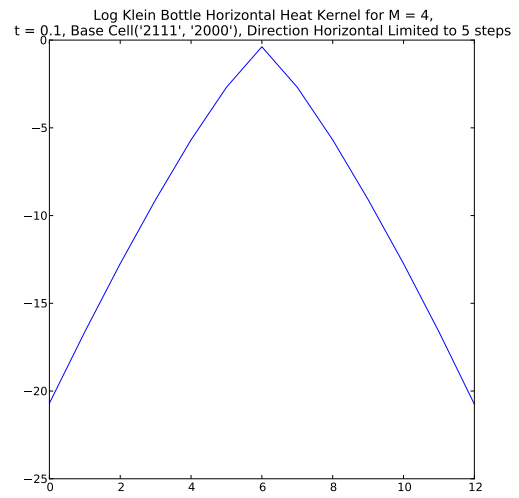
(Log) Horizontal



(Regular — Zoomed) Horizontal

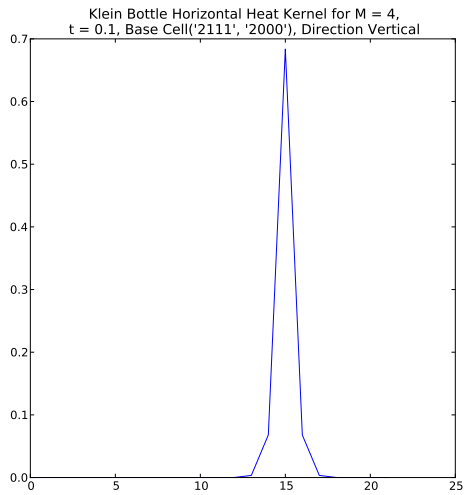


(Log — Zoomed) Horizontal

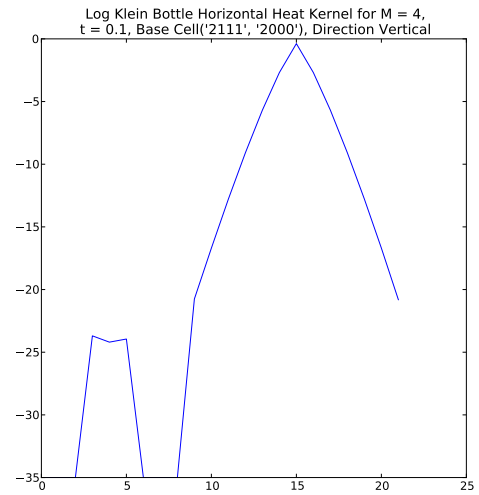


### 3.6 $t = 0.1$ Vertical

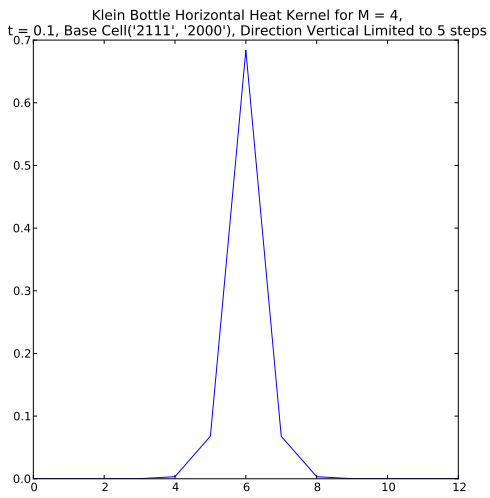
(Regular) Vertical



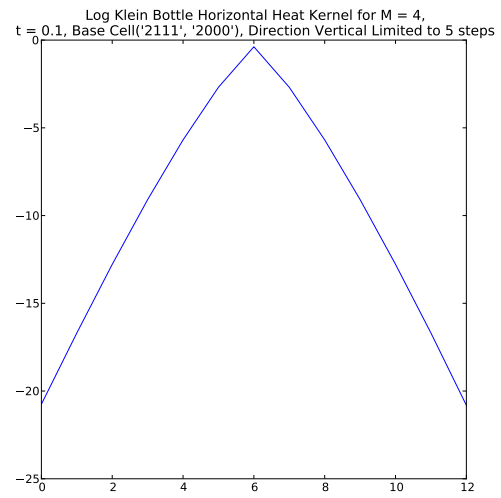
(Log) Vertical



(Regular — Zoomed) Vertical

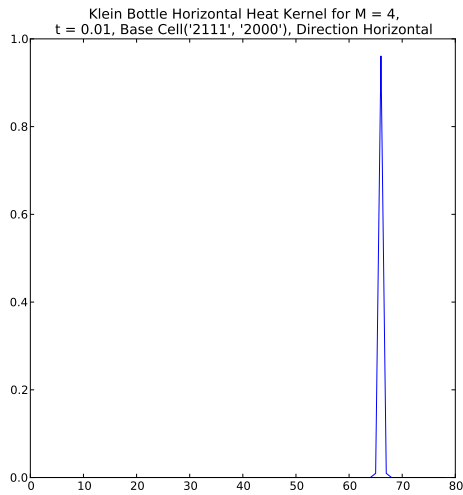


(Log — Zoomed) Vertical

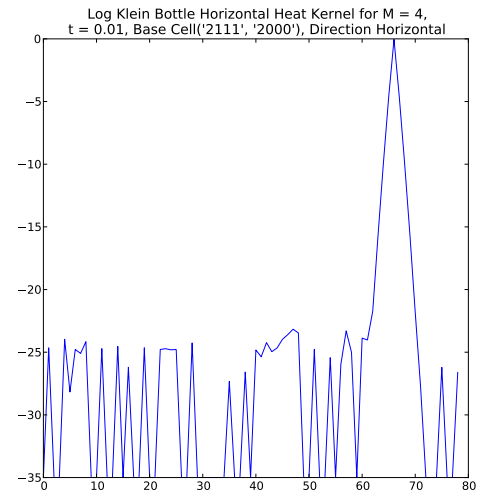


### 3.7 $t = 0.01$ Horizontal

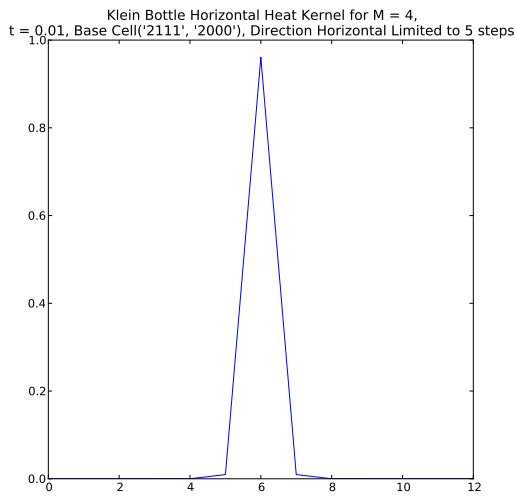
(Regular) Horizontal



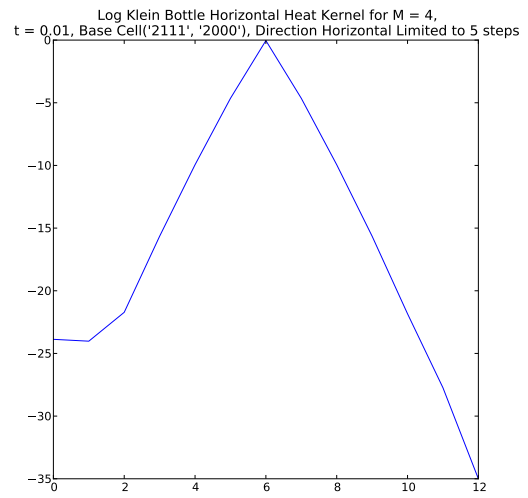
(Log) Horizontal



(Regular — Zoomed) Horizontal

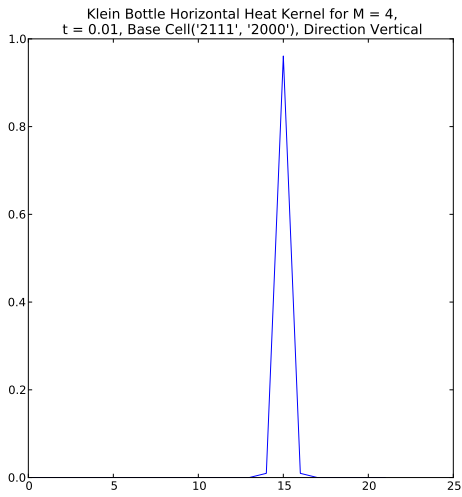


(Log — Zoomed) Horizontal

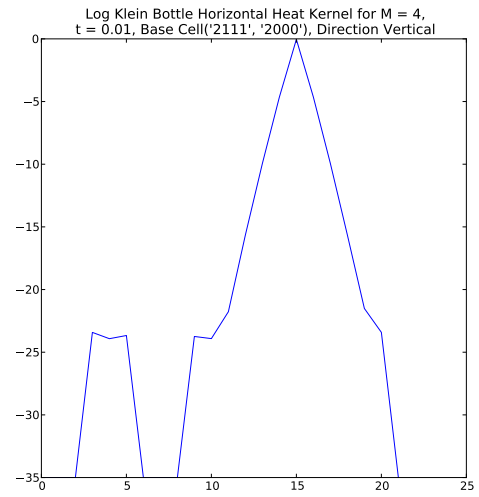


### 3.8 $t = 0.01$ Vertical

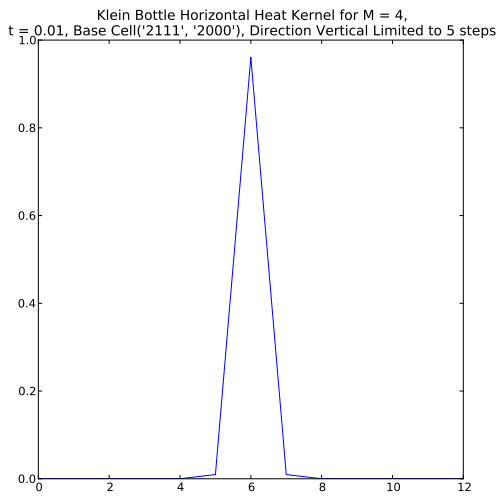
(Regular) Vertical



(Log) Vertical



(Regular — Zoomed) Vertical



(Log — Zoomed) Vertical

