

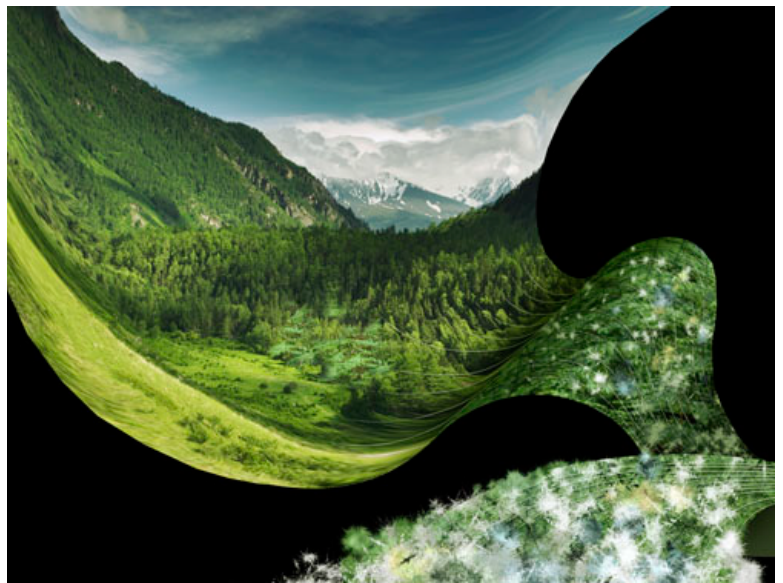
The Oliver Club

www.math.cornell.edu/~oliver/

Boris Tsygan, Northwestern University

Noncommutative Calculus and Formality Theory

Noncommutative calculus is a theory that studies the standard algebraic constructions from the calculus on manifolds in terms of the algebra of functions, and in a way that is applicable for any associative algebra, commutative or not. Noncommutative analogs of the basic objects of calculus, such as forms and multivectors, turn out to be the standard constructions of homological algebra of rings, such as the Hochschild and cyclic complexes.



There are two basic questions: (a) What are the classical algebraic structures that can be generalized to the noncommutative case? (b) If our algebra was the algebra of functions to begin with, are the algebraic structures arising from noncommutative calculus the same as the classical ones? I will review the current state of the theory, as well as its applications to deformation quantization (the Formality Theorem of Kontsevich and its generalizations) and to index theorems.

Thursday, March 1, 2012
at 4:00 PM in 532 Malott Hall

Refreshments will be served at 3:30 PM in the Mathematics Department lounge (532 Malott Hall).