

General Mathematics Seminar  
of the  
University of Luxembourg  
in cooperation with the  
Luxembourg Mathematical Society

**April, 2011**

**Tuesday, April 05, 2011, at 17:00**

**Campus Kirchberg, Room B02**

Alexei Daletskii  
( University of York, UK )

**Cluster Point Processes via Configuration Space Analysis: integration by parts, stochastic dynamics and Poincaré inequalities**

Abstract:

The distribution  $\mu_{cl}$  of a cluster point process in a Riemannian manifold  $X$ , with i.i.d. clusters attached to points of a random (e.g. Poisson or Gibbs) configuration in  $X$ , is studied via the projection of an auxiliary measure on a marked configuration space of  $X$ . We prove an integration by parts formula for  $\mu_{cl}$  and discuss properties of the corresponding Laplacian.

General Mathematics Seminar  
of the  
University of Luxembourg  
in cooperation with the  
Luxembourg Mathematical Society

**April, 2011**

**Tuesday, April 12, 2011, at 17:00**

**Campus Kirchberg, Room B02**

Özgür Ceyhan  
( University of Amsterdam )

**Geometric, topological and number theoretical problems around quantum field theory.**

Abstract:

Many aspects of quantum field theory (QFT) remain puzzling for mathematicians, in particular renormalization techniques which magically produces finite results out of divergent Feynman integrals. In this talk, I will try give an overview of the symmetries of QFTs arising from renormalizations and related problems in geometry, topology and number theory.

General Mathematics Seminar  
of the  
University of Luxembourg  
in cooperation with the  
Luxembourg Mathematical Society

**April, 2011**

**Tuesday, April 26, 2011, at 17:00**

**Campus Kirchberg, Room B02**

Ajay Ramadoss  
( ETH, Zürich )

**A variant of the Mukai pairing via deformation quantization**

Abstract:

We use an algebraic index theorem of P. Bressler, R. Nest and B. Tsygan to give a relatively short computation of a certain pairing on the Hochschild homology of a smooth projective variety. This pairing is closely related to the Mukai pairing constructed by A. Caldararu.