SFB-Seminar

ZEIT:
13.12.2011, 16:00 Uhr - 19:00 Uhr

ORT:
Konrad-Zuse-Zentrum für Informationstechnik Berlin
Takustr. 7
14195 Berlin-Dahlem

PROGRAMM:

16:00 - 17:00 **Prof. Dr. Sylvie Paycha**

Renormalisation at Work in Combinatorics or How to Count Integer Points on Cones
Counting integer points on a cone involves evaluating divergent multiple discrete sums with conical constraints. Computing Feynman integrals in perturbative quantum field theory amounts to evaluating multiple integrals with affine constraints due to the conservation of momentum. In view of this similarity, it comes as no surprise that renormalisation techniques such as Birkhoff-Hopf factorisation used to evaluate Feynman integrals can be implemented to evaluate discrete sums on cones. We shall discuss renormalisation techniques "a la Connes and Kreimer" at work in the combinatorics on cones.

17:30 - 18:30 **Prof. Dr. Sergey Galkin**

Towards the Unified Symmetry
Consider a finite group G of symplectic automorphisms of K3 surface S. Mukai have shown that representation of this group on cohomology of the surface is a pullback of the standard 24-dimensional representation of Mathieu group, and unfortunately group G should have 5-dimensional invariant subspace. On this example I am going to tackle the following question: how to redefine the notions of "symmetry" and "homology" in order to make the natural representation of symmetry on homology more irreducible?

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This is a joint with with Ludmil Katzarkov. We consider two mathematical extensions of the symmetry - to moduli spaces of sheaves and to derived categories. Some of our answers look arguably similar to the recent work of Gaberdiel, Hohenegger and Volpato that characterizes symmetries of super-conformal field theories

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