15. Januar 2009

Einladung

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Heidelberg-Mainz-Seminar

am 21. Januar 2009

im Hilbertraum (05-432)

des Instituts für Mathematik

der Johannes Gutenberg-Universität Mainz

Zeitplan

9.55 Uhr :	Begrüßung
10.00 - 11.00 Uhr :	Kai Johannes Keller
11.15 - 12.15 Uhr :	Thomas Kriecherbauer
Mittagspause	
14.00 - 14.40 Uhr :	Walter Pedra
14.45 - 15.30 Uhr :	Long Lu

Kai Johannes Keller

(II. Institut für Theoretische Physik, Universität Hamburg)

"Euclidean Epstein-Glaser Renormalization."

In the framework of perturbative Algebraic Quantum Field Theory (pAQFT) [R. Brunetti, M. Dütsch, and K. Fredenhagen. *in preparation*, 2009] I will present a general construction of so-called "Euclidean time-ordered products", i.e. algebraic versions of Schwinger functions, for scalar (quantum) field theories on spaces of Euclidean signature. This is done by generalizing the recursive construction of time-ordered products by Epstein and Glaser originally formulated for quantum field theories on Minkowski space [H. Epstein and V. Glaser. *Ann. Inst. Henri Poincaré*, 19(3), 1973]. The main obstruction for such a construction is that there is no notion of causality in the Euclidean framework. Causality on the other hand is the essential input in the recursion of Epstein and Glaser. The work I will present suggests a (rather natural) solution of this particular point.

Thomas Kriecherbauer

(Mathematisches Institut, Ruhr-Universität Bochum)

"On the universal laws of random matrices."

Eigenvalues of random matrices display universal behavior in two ways. On the one hand, local eigenvalue statistics depend for large matrix dimensions only on the symmetries of the matrices but not on the details of the chosen probability measure. On the other hand, these distributions appear in a number of seemingly unrelated combinatorial models and even in number theory! In this talk both aspects of this universal behavior will be discussed.

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Walter Pedra

(Institut für Mathematik, Joh. Gutenberg-Universität Mainz)

"Pepulsively bound States in Lattices."

Long Lu

(Institut für Theoretische Physik, Universität Heidelberg)

"Stability of Ferromagnetism in the Hubbard Model on
Two-dimensional Line Graphs."

The Hubbard model on the line graph has a flat band and highly degenerate
ferromagnetic ground states. Here we study for the Hubbard model on a line
graph of a planar bipartite graph by adding a special contribution to the
kinetic energy which lifts the degeneracy of the lowest single particle state
to a general Hamiltonian. We prove that, at half filling of the lowest band
and for sufficiently strong repulsion U, the ground states of this Hamiltonian
remains saturated ferromagnetism for a class of planar bipartite graphs which
are translationally invariant.

Alle Interessenten sind herzlich eingeladen.