Berlin Leipzig Seminar
Analysis/probability theory
First Meeting Summer Term 2007

Organized by the DFG Research Group *Analysis and Stochastics in Complex Physical Systems*

Date:

Friday, 15 June 2007

Venue:

Technical University Berlin, Institute for Mathematics, Str. des 17. Juni 136, 10623 Berlin
Room MA313/314

Programme:

9:40–10:30: **Manfred Salmhofer (University of Leipzig)**

Determinant bounds and the Matsubara UV problem of many-fermion systems

Abstract: It is known that perturbation theory converges in fermionic field theory at weak coupling if the interaction and the covariance are summable and if certain determinants arising in the expansion can be bounded efficiently, e.g., if the covariance admits a Gram representation with a finite Gram constant. The covariances of the standard many-fermion systems do not fall into this class due to the slow decay of the covariance at large Matsubara frequency. This has caused some technical complications in the treatment of such systems. After a review of this problem I will discuss a new bound for determinants associated to chronological products which is stronger than the usual Gram bound and which applies to the many-fermion case.

10:40–11:30: **Frank Redig (Universiteit Leiden)**

Coupling, concentration inequalities and stochastic dynamics

Abstract: We present a new coupling approach to derive Gaussian and weaker concentration bounds, such as the Devroye inequality. Applications to the low-temperature Ising model will be given, where the usual Gaussian concentration bound does not hold. We also discuss the relation with the L^p relaxation of Glauber and Kawasaki dynamics, giving new proofs and or results in the context of the exclusion process and low-temperature dynamics.

11:40–12:30: **Florian Teil (University of Warwick)**

To be announced

Everybody is welcome to attend. Wolfgang König, University of Leipzig