



## SFB-Seminartag

### TIME:

17th July 2007, 3:00 – 7:00 pm

### LOCATION:

Humboldt-Universität zu Berlin  
Invalidenstraße 42, Nordbau, Hörsaal 8

### PROGRAM:

3:00 – 4:00 pm **HERBERT KURKE**

#### **On the geometric Langlands Conjecture**

The GLC is the following: One expects an equivalence between compactly supported derived categories (of bounded complexes) of coherent sheaves on  $\mathrm{Gr}_c(X, G)$  and of coherent  $\mathcal{D}$ -modules on  $\mathrm{Gr}_{\mathrm{an}}(X, G')$ . Moreover, this correspondence should associate to points  $[E]$  of  $\mathrm{Gr}_c(X, G)$  (identified with the 1-dimensional skyscraper-sheaf supported in  $[E]$ ) so-called "automorphic  $\mathcal{D}$ -modules" = "Hecke-Eigensheaves to  $E$ ". We will explain this notion in some detail, and results obtained in this direction.

4:15 – 5:15 pm **NORMAN DANCER**

#### **Finite morse index solutions of exponential problems and applications**

We discuss finite Morse index solutions of problems with exponential nonlinearities on unbounded  $N$ -dimensional domains and use these results to solve a classical problem on the bifurcation of solutions of nonlinear elliptic equations on bounded domains where the nonlinearity is of exponential type.

5:15 – 5:45 pm Coffee Break/ Kaffeepause

5:45 – 6:45 pm **ALEXANDER GRIGORYAN**

#### **Stability of the Harnack inequality for the heat equation and applications**

We are concerned with the uniform Harnack inequality and heat kernel estimates for the heat equation on weighted Riemannian manifolds. We show that the Harnack inequality is stable under certain non-uniform changes of weight and give applications to the heat kernels of Schroedinger operators in the Euclidean spaces.

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