

**WORKSHOP ON ALGEBRAIC GEOMETRY AND PHYSICS**  
**K-THEORY, DERIVED CATEGORIES AND STRINGS**  
Department of Mathematics, University of Genova, June 18-21, 2002

Supported by:

University of Genova  
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“Geometry of Algebraic Varieties”  
TMR Network ERB FMRX CT-97-0107 “K-theory and algebraic groups”

## Preliminary Programme

### Tuesday, June 18

- 9:00 Registration
- 9:30 Opening
- 9:40 H. Gillet, Introduction to K-theory (I)
- 10:30 Coffee break
- 11:00 P. Seidel, Some (hopefully) useful homological algebra (I)
- 11:50 M. Douglas, D-Branes on Calabi-Yau (I)
- 12:40 Lunch
- 14:30 T. Pantev, Dualities and D-branes (I)
- 15:20 R. Donagi, The gerbe of Higgs bundles
- 16:10 Coffee break
- 16:30 A. Căldăraru, Stable singularities may not be stable, after all

### Wednesday, June 19

- 9:20 H. Gillet, Introduction to K-theory (II)
- 10:10 P. Seidel, Some (hopefully) useful homological algebra (II)
- 11:00 Coffee break
- 11:20 M. Douglas, D-Branes on Calabi-Yau (II)
- 12:10 R. Szabo, D-branes, tachyons and K-homology
- 13:00 Lunch
- 14:30 T. Pantev, Dualities and D-branes (II)
- 15:20 A. Degeratu, Intersection products in the cohomology ring of a crepant resolution of a Calabi-Yau orbifold
- 15:50 Coffee break

- 16:10 M. Rothstein, The Fourier-Mukai transform and equations of KP-type in several variables  
16:40 P. Aschieri, Noncommutative geometry of twisted spheres

**Thursday, June 20**

- 9:20 H. Gillet, Introduction to K-theory (III)  
10:10 P. Seidel, Some (hopefully) useful homological algebra (III)  
11:00 Coffee break  
11:20 M. Douglas, D-Branes on Calabi-Yau (III)  
12:10 R. Horja, Derived categories and mirror symmetry  
13:00 Lunch  
14:30 T. Pantev, Dualities and D-branes (III)  
15:20 R. Kaufmann, Second quantized Frobenius algebras  
15:50 J. Isidro, Nonperturbative vacua in M-theory over torus-fibred Calabi-Yau  
20:00 Workshop Dinner

**Friday, June 21**

- 9:30 G. Vezzosi, Homotopy algebraic geometry  
10:20 A. Tomasiello, Superpotentials for branes in Calabi-Yau manifolds  
11:10 Coffee break  
11:30 B. Szendrői, Enhanced gauge symmetry and generalized braid group actions  
12:00 S. Giusto, Contact terms and topological B-strings  
12:30 P. Newstead, Deformations of Picard bundles  
13:00 Lunch  
14:30 R. Minasian, Kaluza-Klein bundles and manifolds of exceptional holonomy  
15:20 I. Burban, Derived categories of coherent sheaves on degenerations of elliptic curves  
15:50 Coffee break  
16:10 K. Oh, Geometric transitions  
16:40 M. Schlichenmaier, Berezin-Toeplitz quantization of certain moduli spaces