

Vanderbilt University, Department of Mathematics, Nashville, Tennessee, USA

**THE FOURTH ANNUAL SPRING INSTITUTE ON
NONCOMMUTATIVE GEOMETRY AND OPERATOR ALGEBRAS**

May 8 to May 17, 2006

Schedule of Talks

Monday, May 8, 2006

9:20 am - 9:30 am *Welcome*
9:30 am - 10:30 am **Laura Reina** - *Introduction to Quantum Field Theory I*
10:30 am - 11:00 am *Coffee Break*
11:00 am - 12:00 am **Niranjana Ramachandran**- *Introduction to Motives I*
12:00 pm - 2:00 pm *Lunch Break*
2:00 pm - 3:00 pm **Laura Reina** - *Introduction to Quantum Field Theory II*
3:10 pm - 4:10 pm **Katia Consani** - *An Introduction to the Arithmetic of Motives I*
4:10 pm - 4:40 pm *Coffee Break*
4:40 pm - 5:30 pm **Prakash Belkale** - *Matroids, Motives and a Conjecture of Kontsevich*

Tuesday, May 9, 2006

9:30 am - 10:30 am **Niranjana Ramachandran**- *Introduction to Motives II*
10:30 am - 11:00 am *Coffee Break*
11:00 am - 12:00 pm **Laura Reina** - *Introduction to Quantum Field Theory III*
12:00 pm - 2:00 pm *Lunch Break*
2:00 pm - 3:00 pm **Katia Consani** - *An Introduction to the Arithmetic of Motives II*
3:10 pm - 4:00 pm **Ralf Meyer** - *Homological Algebra for Schwartz Algebras of Reduction p -adic Groups*
4:00 pm - 4:30 pm *Coffee Break*
4:30 pm - 5:20 pm **Minhyong Kim** - *Non-Abelian Cohomology Varieties in Diophantine Geometry*

Wednesday, May 10, 2006

- 9:30 am - 10:30 am **Katia Consani** - *An Introduction to the Arithmetic of Motives III*
10:30 am - 11:00 am *Coffee Break*
11:00 am - 12:00 pm **Niranjana Ramachandran**- *Introduction to Motives III*
12:00 pm - 2:00 pm *Lunch Break*
2:00 pm - 3:00 pm **Laura Reina** - *Introduction to Quantum Field Theory IV*
3:10 pm - 4:10 pm **Herbert Gangl** - *From Polygons and Trees to Cycles and Motives I*
4:10 pm - 4:40 pm *Coffee Break*
4:40 pm - 5:30 pm **Don Blasius** - *Motives and Automorphic Forms: An Overview with Examples and Open Problems*
5:45 pm - *Dinner*

Thursday, May 11, 2006

- 9:30 am - 10:30 am **Laura Reina** - *Introduction to Quantum Field Theory V*
10:30 am - 11:00 am *Coffee Break*
11:00 am - 12:00 am **Herbert Gangl** - *From Polygons and Trees to Cycles and Motives II*
12:00 pm - 2:00 pm *Lunch Break*
2:00 pm - 2:50 pm **Henri Moscovici** - *Noncommutative Complex Geometry on the Moduli Space of Q -lattices of Rank 2*
3:00 pm - 3:50 pm **Frédéric Paugam** - *Bost-Connes-Marcolli Systems for Shimura Varieties*
3:50 pm - 4:20 pm *Coffee Break*
4:20 pm - 5:10 pm **Eugene Ha** - *The Connes-Moscovici Hopf Algebra and Representation Theory*

Friday, May 12, 2006

Day Off

Saturday, May 13, 2006

- 9:30 am - 10:30 am **Herbert Gangl** - *From Polygons and Trees to Cycles and Motives III*
10:30 am - 11:00 am *Coffee Break*
11:00 am - 12:00 pm **Li Guo** - *Some Constructions and Applications of Rota-Baxter Algebras I*
12:00 pm - 2:00 pm *Lunch Break*
2:00 pm - 3:00 pm **Matilde Marcolli** - *Noncommutative Geometry and Motives I*
3:10 pm - 4:00 pm **Benoît Jacob** - *Bost-Connes type systems for function fields*
4:00 pm - 4:30 pm *Coffee Break*
4:30 pm - 5:20 pm **Marcelo Laca** - *Equilibrium and Symmetries of Hecke C^* -algebras*

Sunday, May 14, 2006

- 9:30 am - 10:30 am **Alain Connes** - *From Renormalization as Birkhoff Decomposition to the Riemann-Hilbert Correspondence*
- 10:30 am - 11:00 am *Coffee Break*
- 11:00 am - 12:00 pm **Dirk Kreimer** - *Renormalization and Hopf Algebras*
- 12:00 pm - 2:00 pm *Lunch Break*
- 2:00 pm - 3:00 pm **Li Guo** - *Some Constructions and Applications of Rota-Baxter Algebras II*
- 3:10 pm - 4:00 pm **Alessandra Frabetti** - *QED Hopf Algebras and Groups of Combinatorial Series*
- 4:00 pm - 4:30 pm *Coffee Break*
- 4:30 pm - 5:20 pm **Kurusch Ebrahimi-Fard** - *Birkhoff Type Decompositions and the Baker-Campbell-Hausdorff Recursion*

Monday, May 15, 2006

- 9:30 am - 10:30 am **Dirk Kreimer** - *Feynman Graphs*
- 10:30 am - 11:00 am *Coffee Break*
- 11:00 am - 12:00 pm **Alain Connes** - *The Cosmic Galois Group, the Group of Diffeographisms and Diffeomorphisms of Coupling Constants, the Role of Motivic Galois Theory*
- 12:00 pm - 2:00 pm *Lunch Break*
- 2:00 pm - 3:00 pm **Matilde Marcolli** - *Noncommutative Geometry and Motives II*
- 3:10 pm - 4:00 pm **Bertfried Fauser** - *Hopf Algebras in Arithmetic and Renormalization*
- 4:00 pm - 4:30 pm *Coffee Break*
- 4:30 pm - 5:20 pm **Walter van Suijlekom** - *The Hopf Algebra of Feynman Graphs in QED*

Tuesday, May 16, 2006

- 9:30 am - 10:30 am **Alain Connes** - *A Candidate Mental Picture of Space-Time, after Renormalization and Taking the Standard Model Seriously*
- 10:30 am - 11:00 am *Coffee Break*
- 11:00 am - 12:00 pm **Dirk Kreimer** - *Birkhoff Decomposition and Dyson-Schwinger Equations*
- 12:00 pm - 2:00 pm *Lunch Break*
- 2:00 pm - 2:50 pm **Frédéric Fauvet** - *Alien Calculus in Quantum Field Theory*
- 3:00 pm - 3:50 pm **Lucia Di Vizio** - *P-adic q-Difference Equations*
- 3:50 pm - 4:20 pm *Coffee Break*
- 4:20 pm - 5:10 pm **Bahram Rangipour** - *Bicrossed Product Hopf Algebras and Their Hopf Cyclic Cohomology*

Wednesday, May 17, 2006

- 9:30 am - 10:30 am **Dirk Kreimer** - *Towards Number Theory and Motives*
- 10:30 am - 11:00 am *Coffee Break*
- 11:00 am - 12:00 pm **Matilde Marcolli** - *Noncommutative Geometry and Motives III*

End of Conference

