



**The Department of Mathematics and the Center of Advanced Studies in Mathematics announce a special meeting to mark the inauguration of the Noriko Sakurai fellowship.**

***The meeting will take place at Wednesday, March 9, 2011, at Alon building for hi-tech (37-Computer Sciences building), Auditorium 202***

**Program:**

14:45 **Light refreshments**

15:00 **Opening remarks**

**Prof. Rivka Carmi**, BGU president

**Prof. Amos Drori**, Vice-President for External Affairs

**Prof. Daniel Sternheimer**, Keio (Japan) and Bourgogne (France) Universities

**Prof. Miriam Cohen**, Director of the Center of Advanced Studies in Mathematics

15:25 **Ben Gurion Mathematics Colloquium: From thermodynamics to number theory, Pierre Cartier, IHES.**

**Abstract:**

This report is based on some recent work by Alain Connes and Caterina Consani. Many years ago, Bernard Julia made the deep remark that the Riemann zeta function can be viewed as the partition function for an assembly of bosons whose energy spectrum consists of the logarithms of prime numbers. Later, this was reinterpreted by Connes and Bost as coming from a natural representation of some discrete group, in analogy with automorphic functions and Hecke operators.

This gives rise to an operator algebra which is a factor of type III<sub>1</sub>: These authors determined the so-called KMS states of equilibrium quantum statistical mechanics, and discovered a phase transition related to the pole of the zeta function. Connes and Consani noticed recently that the Bost-Connes algebra is another incarnation of an algebra introduced in the 50s by Dieudonné and myself in connection with Witt vectors. This suggests a number-theoretic connection. Indeed, the Bost-Connes system has a  $p$ -adic analogue, throwing a new light on the Iwasawa theory of cyclotomic numbers and  $p$ -adic zeta functions.

16:25 **Dr. Viorica Motreanu, the first incumbent of the Noriko Sakurai fellowship.**

**Abstract:**

We consider two Dirichlet boundary value problems involving the weighted  $p$ -Laplacian and appropriately we introduce a class of double weighted Sobolev spaces. We present sufficient conditions under which the double weighted Sobolev spaces are compactly embedded into a Lebesgue space. Under such a compact embedding property, we then provide existence results for the two problems.