Instructional workshop on free probability
July 26-August 6, 2010
IMSc, Chennai

Free probability theory was invented by Voiculescu in the 1980's and has seen enormous development in the intervening time. It's fundamental point is to view the noncommutive phonomenon appearing in free groups from a probabilistic perspective. The resulting parallels with usual probability theory are astounding. Free probability theory has many applications to operator theory and operator algebras, and there are important connections with random matrices and combinatorics. This workshop will introduce the theory and then cover several topics including:

- the free central limit theorem
- free convolution
- freeness in random matrices
- freeness and the combinatorics of noncrossing partitions
- free products of operator algebras
- free entropy and free entropy dimension
- free stochastic calculus

The workshop will feature two series of nine 90-minute lectures, one each by **Ken Dykema** and **Roland Speicher**. The former will talk about operator-algebraic and analytic aspects, while the latter will address the combinatorial and stochastic ones. And for the icing on the cake, the final two lectures will be delivered by **Dan Voiculescu**.

(Please note that this workshop will be held during the two weeks immediately preceding the Satellite Conference (to ICM 2010) on Operator Algebras - also to be held at IMSc.)

The institute will be able to accommodate upto 25 participants on a first come first served basis. People wishing to attend the workshop should indicate their interest in an email addressed to

sunder@imsc.res.in

and also give a brief description of their background in related areas and why they will benefit from this workshop.