

ICTS Seminar

- Title** : Random structures: Phase transitions, scaling limits, and universality
- Speaker** : Sanchayan Sen, McGill University, Québec
- Date** : Tuesday, June 6, 2017
- Time** : 3:00 PM
- Venue** : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : In the early 2000s, based on non-rigorous arguments, statistical physicists conjectured that for a wide array of random graph models on n vertices and degree exponent $\tau > 3$, typical distance both within maximal components in the critical regime as well as in the strong disorder regime scale like $n^{\frac{\tau \wedge 4 - 3}{\tau \wedge 4 - 1}}$.

More generally, recent research has provided strong evidence to believe that several objects, including

- (i) components under critical percolation,
- (ii) the vacant set left by a random walk, and
- (iii) the minimal spanning tree,

constructed on a wide class of random discrete structures converge, when viewed as metric measure spaces, to some random fractals in the Gromov Hausdorff sense, and these limiting objects are universal under some general assumptions. We report on recent progress in proving these conjectures.

Based on joint work with Louigi Addario-Berry, Shankar Bhamidi, Nicolas Broutin, Sourav Chatterjee, Remco van der Hofstad, and Xuan Wang.