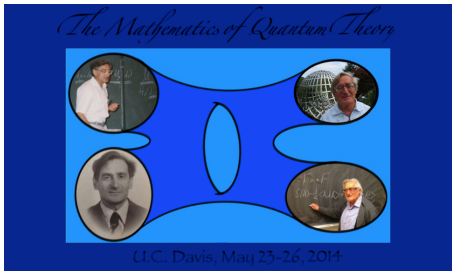

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Topological recursion, cohomological field theories and quantization

Monday 26 May 2014 14:45 (45 minutes)

The topological recursion method is a formalism developed in the context of random matrix theories in order to solve an associated problem of combinatorics consisting in the enumeration of discrete surfaces. This inductive procedure allows to enumerate such surfaces of arbitrary topology out of the only genus 0 data. This theory has further been formalized out of the context of random matrices and mysteriously solved many problem of enumerative geometry using a universal inductive procedure.

In this talk, I will present this topological recursion procedure and explain the reason why it solves many problems of enumerative geometry at once. I will show that, given a semi-simple Frobenius manifold, one can identify the formula of the ancestor Gromov-Witten potential derived by Givental with the correlation functions computed by a local version of the topological recursion. The role of mirror symmetry will be explained and exemplified in the computation of the Gromov-Witten invariants of the projective line. I will finally explain how this procedure produces a semi-classical approximation of a wave function obtained by quantizing the corresponding spectral curve.

Based on joint works with Chekhov, Dunin-Barkowski, Eynard, Norbury, Shadrin and Spitz.

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