Speaker: Danilo Lewanski

Title: A spin on Hurwitz theory and Topological Recursion Speaker: Danilo Lewanski

Abstract: Hurwitz numbers enumerate branched coverings of Riemann surfaces and provide a rich sandbox of examples for enumerative geometry and neighbouring areas. Surprisingly, there is a formula that connects them to the intersection theory of the moduli spaces of stable curves: the ELSV formula. Furthermore, these numbers enjoy an integrability of type 2D-Toda, result that has been later employed in the GW/Hurwitz correspondence. The topological recursion is a procedure originally arising from random matrix models that takes as input a spectral curve — a Riemann surface with some extra data on it — and returns the solution of some enumerative geometric problem. In fact topological recursion is under certain constraints equivalent to the Givental-Teleman reconstruction for semisimple cohomological field theories presented in Zvonkine's course. A spin-off from the research on the mirror symmetry on Calaby-Yau 3-folds led to the generation of Hurwitz numbers via topological recursion. Over time this result has been generalised in different directions, including the Hurwitz count of Riemann surfaces with a spin structure, which are conjecturally determining Gromov-Witten invariants of surfaces with smooth canonical divisor.