Institute of Mathematics
Academia Sinica

Department of Mathematics
National Taiwan University

Lakeside Lectures

Speaker: Prof. Hélène Esnault (Freie Universität Berlin)

Title: The hard Lefschetz theorem,
   classical methods and some recent progress

Abstract: We shall review the classical Hard Lefschetz theorem on Betti cohomology of complex projective and Kähler manifolds, which includes the formulation of Lefschetz, and the theorems of Hodge, then Simpson for semi-simple coefficients, using harmonic theory. We shall then review the Hard Lefschetz theorem of Deligne (and its generalization by Beilinson-Bernstein-Deligne-Gabber) for ℓ-adic cohomology of projective manifolds defined over a finite field $F = F_q$, using Deligne's theory of weights. We'll present a Hard Lefschetz theorem for rank one ℓ-adic coefficients for F any algebraically closed field of positive characteristic, where the theory of weights is not available (joint with Moritz Kerz).

Date: Nov. 25 (Mon), 2019

Time: 14:00-15:00

Venue: Room 202, Astro-Math Building (NTU Campus)

Refreshment: 13:30

Organizers: Yi-Chiuan Chen, Jungkai Chen, Yi-Fan Yang