SCHEDULE WEEK 1

Preschool in Luminy

Cyril Demarche: *Cohomological obstructions to local-global principles*

Hasse proved that for quadrics the existence of rational points reduces to the existence of solutions over local fields. In many cases, cohomological constructions provide obstructions to such a local to global principle. The objective of these lectures is to give an introduction to these cohomological tools.

Date: Monday, April 15th–Sunday, April 21th.

David Harari: *Galois cohomology, arithmetic duality and obstructions to local-to-global principles for rational points*

A general survey about Galois and étale cohomology, arithmetic duality theorems, and Poitou-Tate exact sequences, with an emphasis on applications to local-to-global principles.

Emmanuel Peyre: *Points of bounded height*

These talks will start with an introduction to the notion of heights before giving a survey on the program of Manin about the asymptotic behaviour of rational points of bounded height on varieties.

Damaris Schindler: *Interactions of analytic number theory and geometry*

A general introduction to the state of the art in counting of rational and integral points on varieties, using various analytic methods with the Brauer–Manin obstruction.