

OBERWOLFACH WORKSHOP 2440: 29 SEPTEMBER – 4 OCTOBER 2024

ANABELIAN GEOMETRY AND REPRESENTATIONS OF FUNDAMENTAL GROUPS

Organizers:

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1. PUBLIC ABSTRACT

Abstract: The research area of this MFO Workshop is *arithmetic geometry* with emphasis on arithmetic of fundamental groups. The workshop brings together researchers who study variants of fundamental groups (étale, Tannakian, etc.), their respective representations and interactions with arithmetic and geometry.

The focal point of the workshop will lie in anabelian geometry and representations of fundamental groups attached to motives. The use of anabelian methods in motivic contexts is a new research direction initiated in the past few years; and similarly, only recently specific anabelian properties of (motivic) representations of (étale) fundamental groups have been investigated. The increased interaction between these research directions will lead to new research threads, thereby advancing the subject and its applications.

The main topics of the workshop are: (1) The section conjecture, which is one of the main remaining open problems in Grothendieck’s anabelian programme. (2) Higher dimensional anabelian geometry, in particular identifying the right setting for higher dimensional anabelian phenomena. (3) Bogomolov’s anabelian programme, aiming to reconstruct higher-dimensional geometric function fields from minimal Galois theoretic data. (4) The I/OM and connections with \widehat{GT} , which is about combinatorial/topological descriptions of absolute Galois groups. (5) Tannakian categories and motives, the aim being to identify the “geometric” objects among all lisse ℓ -adic sheaves. (6) Rigidity of ℓ -adic representations, aiming to describe lisse ℓ -adic sheaves over \bar{k} arising from ones over k . (7) Uniform boundedness and rational points, aiming at a (weak) anabelian dictionary towards unifying various classical conjectures on invariants in étale cohomology. (8) The unipotent section conjecture and relations to refinements of the Faltings-Mordell Theorem.