

## **Abstract**

Oberwolfach Workshop:

### **Analytic Number Theory**

Dates:

**02 - 07 November 2025** (Code: 2545)

Organizers:

**Kaisa Matomäki, Turku**  
**James Maynard, Oxford**  
**Kannan Soundararajan, Stanford**  
**Trevor D. Wooley, West Lafayette**

This meeting on Analytic Number Theory will bring together leading experts in the field and the large number of talented younger researchers who have been attracted into the field by the many and varied exciting advances in recent years.

These include the remarkable progress in the past decade on a plethora of stubborn problems stemming from progress on sieve methods primarily due to Maynard and others (primes with restricted digits, Gaussian and other prime gaps, etc), consequences of the subtle mix of combinatorial and analytic ideas revealed by the solution in 2019 of the Duffin-Schaeffer conjecture by Koukoulopoulos and Maynard, developments flowing from the proof of the main conjecture concerning the Vinogradov mean value theorem in 2015, especially its impact on Diophantine problems, the deeper insight into the nature of multiplicative functions, especially in very short intervals arising from the work of Matomäki and Radziwiłł in 2015, and the thriving interplay between analytic number theory and additive combinatorics from the past decade and more.

There is also a dynamic novel interface emerging between statistical arithmetic geometry and algebraic number theory, mostly by Bhargava and his co-workers, with important recent progress on class number distributions and ranks of elliptic curves.

Other aspects of the subject that are methodologically close will also be covered. These themes include the emerging developments concerning moments of and properties of zeta and L-functions motivated by random matrix analogues, and analytic approaches to Manin's conjecture and its generalizations.