OBERWOLFACH WORKSHOP
ARITHMETIC STATISTICS FOR ALGEBRAIC OBJECTS (2546)

Abstract

Arithmetic Statistics is a branch of Number Theory concerned with counting and distribution problems for such fundamental objects as polynomials, algebraic number fields, elliptic curves, L-functions, modular forms, integral matrices, etc, where much progress has been made in the last decades. The aim of the proposed workshop is to focus on recent breakthroughs on statistical aspects of algebraic objects, which have not received as much attention in recent workshops as they deserve. These include random polynomials and varieties, multiplicative arithmetic functions, specialisation problems for algebraic functions and connections to other areas (such as arithmetic geometry), and various statistics for arithmetic groups (e.g., arithmetic statistics with matrices or boundely generated groups). The proposed topic for this workshop has seen many breakthroughs towards longstanding problems and conjectures (van der Wearden conjecture, function field versions of the Twin Prime conjecture and its generalisations, the Schinzel Hypothesis H and the Bateman-Horn conjecture, the Hasse principle, the Hilbert Irreducibility Theorem, statistics of arithmetic groups, to mention just a few).

One key aspect in these developments is the vast arsenal of tools from different areas that had to be developed. We will concentrate on these emerging methods behind such advances and future directions around these problems.