

## **Abstract**

Oberwolfach Workshop:

### **New Mathematical Directions in Coding Theory**

Dates:

**7 September – 12 September 2025** (Code: 2537)

Organizers:

**Noga Ron-Zewi, Haifa**

**Mary Wootters, Stanford**

Coding theory is concerned with the design and analysis of error-correcting codes, a method for protecting data from noise or corruption. In addition to their wide practical applicability, error-correcting codes are also supported by a rich theory, with connections to diverse disciplines in mathematics, science, and engineering. This workshop focuses on several exciting mathematical methods in the design of error-correcting codes, including high-dimensional expanders, convex optimization, and structured random ensembles. These methods have led to recent breakthroughs in coding theory. The goal of this workshop is to bring together researchers from multiple communities to exchange ideas around these and other mathematical techniques, hopefully leading to further advances.