

Abstract

Oberwolfach Workshop:

New Mathematical Techniques in Information Theory

Dates:

13 Mar - 19 Mar 2022 (Code: 2211b)

Organizers:

Amos Lapidoth, Zürich
Prakash Narayan, College Park

Striking progress has been made in recent years in developing mathematical approaches and tools for solving classical as well as a new generation of emerging problems in information theory and related areas. They include: modern information measures, measure concentration, hypercontractivity and correlation measures, and advanced techniques in network information theory for proving converse results and establishing Gaussian optimality through new distributional characterizations. These methods have led to early successes and hold the potential for enabling significant breakthroughs.

The aim of the Workshop is to foster an exchange of ideas on such new approaches that are typically outside the rich and venerable toolbox of the information theorist and that are yet useful in solving generations of problems in information theory. Workshop participants will consist of a selection of contributors to the development of said mathematical approaches as well as scientists whose research serves to motivate them. The Workshop will consist of a combination of approximately 30-minute presentations as well as longer tutorial lectures, with adequate intervening time for extended discussion. Participants will be invited to make presentations with an emphasis on emergent topics.