# The Weizmann Institute of Science
# Faculty of Mathematics and Computer Science

## Geometric Functional Analysis and Probability Seminar

Room 155, Ziskind Building
on Thursday, Jun 20, 2024
at 13:30

**Manor Mendel**
OpenU

will speak on

### Expander with respect to random regular graphs

Abstract:
Expander is a family of constant degree graphs with spectral gaps larger than some positive constant. From a Metric Geometry perspective, the spectral gap implies their non-embeddability in Hilbert space in any meaningful way. It is therefore customary in Metric Geometry to generalize them to expanders that do not embed well in a given metric space X, called X-expanders. Non-Hilbertian Expanders were first studied by Linial-London-Rabinovich, Matousek, and Gromov. In a breakthrough result, V. Lafforgue proved the existence of a super(-reflexive)-expander. It is an open question whether every (classical) expander is also a super-expander.

In this talk I will discuss the existence of expanders with respect to random regular graphs. It gives the first example of a metric space X for which some expanders are X-expanders and some are not X-expanders. The construction is based on the zigzag expanders of Reingold-Vadhan-Wigderson and uses concepts and techniques from expander graph theory, random graph theory, probability, local theory of Banach spaces, and Alexandrov spaces.

The talk is based on joint papers with A. Naor and a forthcoming joint paper with A. Eskenazis and A. Naor.