

December 3, 2014: Ori Parzan (IAS), *Combinatorics of Ramanujan complexes*.

Ramanujan graphs are sparse and highly connected graphs, with many remarkable and useful properties. They were first constructed by Lubotzky-Phillips-Sarnak and by Margulis, using the Ramanujan-Petersson conjecture for GL_2 . Advances around the Ramanujan conjecture for GL_d have led several authors to study “Ramanujan Complexes”, which are a natural high-dimensional analogue. I will talk on the spectral theory of Ramanujan complexes of dimension 2, and some combinatorial properties which can be inferred from it. Based on joint work with Konstantin Golubev.