

1127-60-365

**Eyal Lubetzky\***, Courant Institute of Mathematical Sciences, New York University, 251 Mercer St, New York, NY 10012. *Random walks on Ramanujan graphs, complexes, and digraphs.*

We will discuss the sharp transition in the time it takes simple random walk on regular Ramanujan graphs to approach the uniform distribution (known as the cutoff phenomenon), and geometric consequences (such as typical distances between vertices) that this implies for such graphs. We will then discuss how these ideas can be extended to regular Ramanujan digraphs, and consequently, to any  $d$ -dimensional Ramanujan complexes for  $d > 1$  associated with a simple group, with analogous geometric implications for these objects.

Base on joint works with Y. Peres and with A. Lubotzky and O. Parzanchevski. (Received February 07, 2017)