

1147-94-63

**Hyungrok Jo\*** (h-jo@edu.k.u-tokyo.ac.jp), Tokyo-to, Bunkyo-ku, Hongo 7-3-1, Tokyo, Tokyo 1138656, Japan, and **Yoshinori Yamasaki** and **Shingo Sugiyama**. *A general construction of LPS-type Ramanujan graphs.*

Ramanujan graph is an optimal combinatorial structure of expander graph in a sense of random walks on graphs. In general, it is difficult to find explicit constructions of Ramanujan graphs. There are only a few explicit Ramanujan graphs so far such as Cayley-type by Lubotzky-Phillips-Sarnak (LPS) in '88, Morgenstern in '94, Chiu in '92 and non-Cayley-type by Pizer in '90.

In this talk, we extend a family of LPS Ramanujan graphs in a way of constructing a new family of LPS-type Ramanujan and appeal these graphs as prominent candidates for secure Cayley hash functions even in a cryptographic sense. (Received January 25, 2019)