Department of Mathematical Sciences
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SEMINAR

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February 20, 2003
304 Whitehead Hall
Refreshments: 3:30 p.m.
Seminar: 4:00 p.m.

EXPLICIT UNIQUE-NEIGHBOR EXPANDERS

Abstract

An *expander graph* is (here) a bipartite graph $\Gamma = (X, Y, E)$, where $|X| \geq |Y|$, in which, for every "not too large" subset S of X, there are a "large" number of vertices in Y that are adjacent to at least one vertex in S. (We will later quantify more precisely what we mean by "not too large" and "large.") We say further that Γ is a *unique-neighbor expander* if there are a large number of vertices in Y that are adjacent to exactly one vertex in S. Why should one study unique-neighbor expanders? For one thing, they are very useful for various simple distributed algorithms. For another, their construction has been a long-standing open question, until last year. Here we answer this long-standing open question by presenting an explicit construction of an infinite family of unique-neighbor expanders.