

1079-05-210

Michael Goff* (michael.goff@vanderbilt.edu), Vanderbilt Math Department, 1326 Stevenson Center, Nashville, TN 37240. *Edge growth in graph squares.*

Peter Hegarty has posed the problem of finding lower bounds on a power of a d -regular graph. We will survey some main results and in particular show that, if G^2 is not a complete graph and is not a member of two narrow families of graphs, then G^2 has at least $2n - o_1(d)$ edges more than G . We will discuss the connection between the graph power problem and the Cauchy-Davenport theorem and Cayley graphs, and we propose variants of the problem with stronger regularity conditions on the graph. (Received January 13, 2012)