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Daniel S Silver* (silver@southalabama.edu), Department of Mathematics and Statistics, ILB 325, Mobile, AL 36608, and **Susan G Williams**. *Periodic graphs, spanning trees and Mahler measure.*

Motivated by techniques of knot theory and algebraic dynamical systems, we prove several results about connected, locally finite graphs G with free Z^d -action by automorphisms. For any such graph, a *Laplacian polynomial* $\Delta(G)$ in d variables is defined. Its logarithmic Mahler measure $m(\Delta(G))$ is a growth rate of spanning trees. When G is a lattice graph, this rate determines the so-called *thermodynamic limit* of G , usually computed by analytic methods rather than the algebraic ones used here.

We prove that $m(\Delta(G))$ is minimized by the standard d -dimensional grid graph G_d . We prove also that $m(\Delta(G_d))$ is asymptotic to $\log 2d$ as d goes to infinity. (Received August 10, 2015)