

1014-37-638

Douglas Lind* (lind@math.washington.edu), Department of Mathematics, Box 354350, University of Washington, Seattle, WA 98195. *Mahler Measure for Polynomials in Noncommuting Variables*. Preliminary report.

The logarithmic Mahler measure of a polynomial having integral coefficients and in commuting variables is known to equal the entropy of a related dynamical system. Let Γ be any countable amenable group, and $R = \mathbb{Z}\Gamma$ be its integral group ring. For $f \in R$ we can reverse the above reasoning to *define* the logarithmic Mahler measure of f to be the entropy of the left Γ -action on the Pontryagin dual of R/Rf . Recently Denninger has identified this entropy as the Fuglede-Kadison determinant in a related von Neumann algebra. In joint work with Klaus Schmidt, for some specific groups such as the integral Heisenberg group we develop formulas indicating that this quantity is genuinely new, leading to many open problems. (Received September 21, 2005)