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An Invariant Property of Mahler Measures

The Mahler measure of a polynomial $P(x_1, x_2, \dots, x_n)$ is the average value of $\log |P|$ along the unit n -torus \mathbb{T}^n (defined by $|x_i| = 1$ for all i). Interest in this quantity arose from the fact that Mahler measures of certain polynomials are quite remarkable and not just arbitrary real numbers. If P is univariate, this measure is given by Jensen's formula in terms of its roots, and in the multivariable case, it has been observed that it evaluates to special values of L -functions. Oftentimes, a numerical experiment leads to a conjecture equating the Mahler measures of certain polynomials to these special values. In this talk, we shall investigate an interesting invariant property that provides a method to extend identities involving Mahler measures and also resolve some conjectures along the way. This is joint work with Matilde Lalin.