

Mahler measures, equidistribution, and applications

ABSTRACT: In 1960, Mahler proved a formula that relates the usual Weil height of an algebraic number to an integral along the unit circle. This formula has been generalized to a formula relating more general canonical heights on the projective line to integrals involving more general invariant measures. Using diophantine approximation, it can be shown that these integrals can be computed by equidistribution on the periodic points of the corresponding dynamical system. This equidistribution result and its conjectured generalizations give rise to a dynamical version of the Manin-Mumford theorem for torsion points on abelian varieties as well as to new bounds on the differences between canonical heights.