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Matthew H. Baker* (mbaker@math.gatech.edu), School of Mathematics, Georgia Institute of Technology, Atlanta, GA 30332-0160. *Arithmetic of dynamical Green's functions.*

Given a rational function φ of degree at least 2 defined over a global field K , the Neron-Tate iteration procedure attaches to φ a global dynamical height function \hat{h}_φ which satisfies the functional equation $\hat{h}_\varphi(\varphi(z)) = d\hat{h}_\varphi(z)$. We will discuss some applications of a canonical decomposition of the global dynamical height into a sum of local dynamical Green's functions. An important feature of this decomposition is its interpretation in terms of the theory of Berkovich spaces. Applications include an adelic equidistribution theorem for points of small dynamical height; lower bounds for the degrees of field extensions generated by periodic points of φ ; and a version of the Northcott finiteness principle for dynamical heights over function fields with infinite field of constants. (Received September 19, 2006)