1048-05-127 **Matthias Beck*** (beck@math.sfsu.edu), Department of Mathematics, San Francisco State University, San Francisco, CA 94132, and **Alan Stapledon**, Department of Mathematics, University of Michigan, Ann Arbor, MI 48109. *Asymptotics of Ehrhart series of Lattice Polytopes.*

If P is a lattice polytope (i.e., P is the convex hull of finitely many integer points in $\mathbf{R}^d$), Ehrhart's theorem asserts that the integer-point counting function $L_P(m) = \#(mP \cap \mathbf{Z}^d)$ is a polynomial in the integer variable m. Equivalently, the generating function $Ehr_P(t) = \sum_{m \geq 0} L_P(m) t^m$ is a rational function of the form $h(t)/(1-t)^{d+1}$; we call $h(t)$ the Ehrhart h-vector of P. We study the behavior of the Ehrhart series $Ehr_{nP}(t) = \sum_{m \geq 0} L_P(nm) t^m$ as n grows; e.g., we can prove that the Ehrhart h-vector of nP is eventually unimodal, where "eventually" only depends on the dimension of P. Our results are general combinatorial theorems about generating functions and can be applied to other settings, e.g., Veronese subrings of graded rings. (Received February 03, 2009)