1121-05-241 **Quang-Nhat Le***, 8 Stimson Ave, Providence, RI 02906, and **Ricardo Diaz** and **Sinai Robins**.
Fourier analysis and counting lattice points inside polytopes.

Counting lattice points inside polyhedral sets has been used to study the growth of group presentations. For example, Moon Duchin and Michael Shapiro have employed this in their study of the growth of presentations of the integer Heisenberg group. In a larger context, the theory of lattice-point enumerating functions of polytopes is a classical subject, pioneered by Eugene Ehrhart, with far-reaching applications in number theory, algebraic geometry, statistics, etc.

Previously, the theory concerned mostly with the specific case of integer dilates of integer or rational polytopes. In a joint work with Ricardo Diaz and Sinai Robins, we use the framework of the Fourier transform and the Poisson summation formula to extend the classical theory to the general case of real dilates of real polytopes. We are mostly concerned with Macdonald's solid-angle sums, which is a weighted lattice-point count closely related to the weightless count. We are also able to obtain a closed form for the subdominant asymptotic term (codimension-1 coefficient) of the solid-angle sum; the dominant term is trivially the volume of the given polytope. (Received July 19, 2016)