1033-52-239 **sinai robins*** (srobins@temple.edu). *A solid angle theory for real polytopes.*

We extend many theorems from the context of solid angle sums over rational polytopes to the context of solid angle sums over real polytopes. This theory captures a new measure of volume, which is a kind of discrete volume of polytopes. Moreover, we consider any real dilation parameter, as opposed to the traditional integer dilation parameters.

One of the main results is an extension of Macdonald's solid angle quasipolynomial for rational polytopes to a real analytic function of the dilation parameter, for any convex polytope whose vertices have arbitrary real coordinates. Some of this work is joint with my student David DeSario. I'll present some computer graphics to illustrate the ideas more clearly. (Received September 11, 2007)