1129-05-325 **Benjamin P. Fischer*** (ben.fischer@loomis.org). *Perturbed Polyhedra and a Local Euler-Maclaurin Formula.*

A polyhedron P is a subset of a rational vector space V bounded by hyperplanes. If we fix a lattice in V, then we may consider the exponential integral and sum, two meromorphic functions on the dual vector space, which serve to generalize the notion of volume of and number of lattice points in P, respectively. In 2007, Berline and Vergne constructed an Euler-Maclaurin formula that relates the exponential sum of a given polyhedron to the exponential integral of each face. This formula was 'local', meaning that the coefficients in this formula had certain properties independent of the given polyhedron. In this talk, we will describe a new, direct construction for this formula which is very different from the inductive construction given by Berline and Vergne. We will consider a ring of differential operators $R(P)$ on the exponential volume of a 'perturbed' polyhedron, an object which is closely related to the equivariant cohomology ring of the toric variety corresponding to P. Due to the remarkable combinatorial properties of the exponential integral and sum, no algebraic geometry is necessary to understand the construction. (Received March 19, 2017)