1047-14-381 **Mari F. Castle*** (mfc7379@kennesaw.edu), 1000 Chastain Road, #1204, Kennesaw, GA 30144-5591, **Victoria Powers** (vicki@mathcs.emory.edu), 400 Dowman Dr., W401, Atlanta, GA 30322, and **Bruce Reznick** (reznick@math.uiuc.edu), 1409 W. Green Street, Urbana, IL 61801-2975. *Pólya's Theorem with Zeros.*

Let $\mathbb{R}[X] = \mathbb{R}[X_1, \dots, X_n]$ and let Δ_n denote the standard n-simplex $\{(x_1, \dots, x_n) \in \mathbb{R}^n \mid x_i \geq 0, \sum_i x_i = 1\}$. Pólya's Theorem says that if a form (homogeneous polynomial) $p \in \mathbb{R}[X]$ is positive on Δ_n, then for sufficiently large $N \in \mathbb{N}$, the coefficients of $(X_1 + \cdots + X_n)^N p$ are positive. In this talk, we discuss a generalization of Pólya's Theorem to form which are allowed to have zeros in the simplex. We give a characterization of forms which satisfy the conclusion of Pólya's Theorem (with "positive coefficients" replaced by "nonnegative coefficients") and give a bound for the N needed. (Received February 02, 2009)