1094-52-380 **Luis Rademacher*** (lrademac@cse.ohio-state.edu), Dreese Labs 495., 2015 Neil Avenue, Columbus, OH 43210. *The simplex is the only simplicial maximizer of the isotropic constant.*

The isotropic constant L_K is an affine-invariant measure of the spread of a convex body K. For a d-dimensional convex body K, L_K can be defined by $L_K^{2d} = \det(A(K))/(\text{vol}(K))^2$, where $A(K)$ is the covariance matrix of the uniform distribution on K. It is an outstanding open problem to find a tight asymptotic upper bound of the isotropic constant. It has been conjectured that there is a universal constant upper bound. The conjecture is know to be true for several families of bodies, in particular, highly symmetric bodies such as bodies having an unconditional basis. It is also know that maximizers cannot be smooth.

In this work we study the gap between smooth bodies and highly symmetric bodies by showing progress towards reducing to a highly symmetric case among non-smooth bodies. More precisely, we study the set of maximizers among simplicial polytopes and we show that if a simplicial d-polytope K is a maximizer of the isotropic constant among d-dimensional convex bodies, then when K is put in isotropic position it is symmetric around any hyperplane spanned by a $(d-2)$-dimensional face and the origin. By a result of Campi, Colesanti and Gronchi, this implies that the simplex is the only simplicial maximizer of the isotropic constant. (Received August 27, 2013)