1059-52-123 **Luis A Rademacher*** (lrademac@cse.ohio-state.edu), Dreese Labs 495, 2015 Neil Ave., Columbus, OH 43210. *On the monotonicity of the expected volume of a random simplex.* Preliminary report.

The slicing conjecture is one of the main open questions in asymptotic convex geometry, among other reasons, because of its connections with many other problems in convex geometry, such as isoperimetric inequalities, the Busemann-Petty problem, Sylvester's problem, etc. The conjecture is: every d-dimensional convex body of volume 1 has a hyperplane section of area at least a universal constant. A few years ago, M. Reitzner and M. Meckes asked independently the question below, motivated by the study of random polytopes as well as a strong connection with the slicing conjecture. In this talk we will see some of these problems, connection and applications, as well as a nearly complete answer to the question below:

Let a random simplex in a d-dimensional convex body be the convex hull of $d+1$ random points from the body. We study the following question: As a function of the convex body, is the expected volume of a random simplex monotone non-decreasing under inclusion? We show that this holds if d is 1 or 2, and does not hold if $d \geq 4$. We also prove similar results for the second moment of the volume of a random simplex and the determinant of the covariance matrix of a convex body. (Received February 21, 2010)