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A. E. Litvak* (alexandr@math.ualberta.ca), Dept. of Math. and Stat. Sciences, University of Alberta, Edmonton, Alberta T6G 2G1, Canada, and **E. D. Gluskin** (gluskin@post.tau.ac.il), School of Math. Sciences, Tel Aviv University, Ramat Aviv, 69978 Tel Aviv, Israel. *Asymmetry of convex polytopes and vertex index of symmetric convex bodies.*

In 2002 we showed that a polytope with few vertices is far from being symmetric in a sense of the Banach-Mazur distance. More precisely, it was shown that the Banach-Mazur distance between such a polytope and any symmetric convex body is large. In this talk we introduce a new, averaging-type parameter to measure the asymmetry. It turns out that, surprisingly, this new parameter is still very large, in fact it satisfies the same lower bound as the Banach-Mazur distance. We apply our results to provide a lower estimate on the vertex index of a symmetric convex body, which was recently introduced by Bezdek and Litvak. Furthermore, we give the affirmative answer to a conjecture by K. Bezdek on the quantitative illumination problem. (Received February 13, 2007)