On Pariwise Touching Homothetic Copies of Convex Bodies

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Abstract

According to a conjecture of Károly Bezdek and János Pach from 1986, the maximum number of pairwise touching positive homothetic copies of any convex body in Euclidean d-space is 2^d. This bound, if it holds, is sharp as it is attained by cubes. The previously known bound was 3^d, which I improved to $2^{d+1} - 1$. This year, together with Zsolt Langi, we improved the bound for symmetric bodies. In the talk I will outline the methods of showing that if K is a *symmetric* convex body in Euclidean d-space, the cardinality of a family of pairwise touching homothetic copies is at most $1.5 \cdot 2^d - 1$.