

ON THE HOMOTHETIC KISSING NUMBERS OF A TETRAHEDRON

István Talata

Budapest University of Economics and Business

Let K be a d -dimensional convex body, and let c be a real number, $c \neq 0$. Then, for every $v \in \mathbb{R}^d$, $cK + v = \{c \cdot k + v \mid k \in K\}$ is a homothetic copy of K whose ratio of homothety is c . The homothetic kissing number $H(K, c)$ of K with ratio of homothety c is the maximum number of mutually nonoverlapping homothetic copies of K with ratio of homothety c that can be arranged so that all touch K . This notion is a generalization of the translative kissing number of a convex body.

Let $T \subseteq \mathbb{R}^3$ be a tetrahedron. We give upper and lower bounds for $H(T, c)$ for various values of c .