1093-52-91 **David A Cox**, **Christian Haase**, **Takayuki Hibi*** (hibi@math.sci.osaka-u.ac.jp) and **Akihiro Higashitani**. *Integer decomposition property of dilated polytopes.*

Let $\mathcal{P} \subset \mathbb{R}^N$ be an integral convex polytope of dimension $d$ and $k\mathcal{P}$, where $k = 1, 2, \ldots,$ for dilations of $\mathcal{P}$. We say that $\mathcal{P}$ possesses the *integer decomposition property* (IDP, for short) if, for any positive integer $k$ and for any $\alpha \in k\mathcal{P} \cap \mathbb{Z}^N$, there exist $\alpha_1, \ldots, \alpha_k$ belonging to $\mathcal{P} \cap \mathbb{Z}^N$ such that $\alpha = \alpha_1 + \cdots + \alpha_k$. A fundamental question is to determine the integers $k > 0$ for which the dilated polytope $k\mathcal{P}$ possesses IDP. Our talk gives several combinatorial invariants related to IDP of dilated polytopes and shows that those invariants satisfy certain inequalities. In addition, various examples of integral convex polytopes, which are important from the viewpoint of IDP of dilated polytopes, will be discussed. (Received August 02, 2013)