# On generalized lower bound conjecture for simplicial polytopes

*Satoshi Murai*
*Yamaguchi University*

In 1971, McMullen and Walkup conjectured that if P is a simplicial $d$-polytope then its $h$-vector $(h_0, h_1, \ldots, h_d)$ satisfy (i) $h_{r-1} \leq h_r$ for $r \leq \frac{d}{2}$, and (ii) if $h_{r-1} = h_r$ for some $r \leq \frac{d}{2}$ then $P$ can be triangulated without introducing simplicies of dimension $\leq d - r$.

The first part of the conjecture was solved by Stanley in 1980 by using the Hart Lefschetz theorem for projective toric varieties. In this talk, I will show that the second part of the conjecture is also true and explain how commutative algebra relates to this conjecture.

This is a joint work with Eran Nevo.