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*Powers of edge ideals with linear resolutions*

Let  $I(G)$  be the edge ideal of a simple graph  $G$  and let  $F_k$  be the set of simple graphs  $G$  for which  $I(G)^d$  has a linear resolution for all  $d \geq k$ . Although Herzog, Hibi and Zheng showed that  $F_1$  is the set of chordal graphs, combinatorial classifications of  $F_k$  for  $k \geq 2$  remain to be found. Nevo's family of claw and four cycle free graphs may be a subset of  $F_2$  since their second powers have linear resolutions, but it is not known whether the higher powers of these graphs also have linear resolutions. I will be talking about combinatorial techniques for showing higher powers of edge ideals have linear resolutions in an effort to identify subsets of the  $F_k$ .