

بِسْمِ اللَّهِ تَعَالَى



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## Binomial edge ideals

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Let  $G$  be a simple graph on the vertex set  $[n]$  and  $R = K[x_1, \dots, x_n, y_1, \dots, y_n]$  be the polynomial ring over the field  $K$ . The *binomial edge ideal* of  $G$  is the ideal

$$J_G = (f_{ij} : \{i, j\} \in E(G) \text{ and } i < j) \subset R,$$

where  $f_{ij} = x_i y_j - x_j y_i$ .

The interest in studying binomial edge ideals comes from the fact that they have applications in statistics. In this talk, we are going to discuss the numerical invariants of  $J_G$  like depth, regularity and Hilbert function. Next, We discuss about intersection of binomial edge ideals and using it, we classify the graphs  $G$  with  $|Ass(J_G)| \leq 3$ .

The first part of the talk is based on joint work with Fatemeh Mohammadi, while the second part represents some of my recent results.