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*When do monomial ideals have linear resolutions?*

In 1990 Fröberg showed that the edge ideal of a graph has a linear resolution if and only if the complement of the graph is chordal. In this talk we will discuss the generalization of Fröberg's theorem to higher dimensions. In particular we will discuss new classes of simplicial complexes which extend the notion of a chordal graph and which give rise to a necessary condition for an ideal to have a linear resolution over any field. We will also provide a necessary and sufficient combinatorial condition for a square-free monomial ideal to have a linear resolution over fields of characteristic 2.