

Betti numbers of graphs

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Abstract

This talk will give an overview of an area of research that sits at the intersection of commutative algebra and combinatorics: Betti numbers of graphs. In particular, we will describe how one can associate an ideal in a polynomial ring to a given graph. We will then discuss some of the algebraic invariants of the ideal and their relation to the existence of subgraphs in the original graph. We also hope to have the time to indicate a novel application of this theory to a problem in hypothesis testing and to discuss some of our recent work “splitting cycles.” This talk will be expository and will not presume significant familiarity with either commutative algebra or graph theory.

Keywords: Betti number, graph, commutative algebra