

Singularities of Polynomials with Square-Free Support

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A polynomial over a field is square-free supported if every variable appearing in it has degree at most one. Interest in such polynomials arises from matroid support polynomials, studied by Bath and Walther. In this talk, we will provide an overview of the study of singularities in prime characteristic via the Frobenius map. We will show that the algebraic variety defined by an irreducible polynomial with square-free support has mild singularities, answering a question posed by Bath, Mustață, and Walther. We will also discuss the consequences of these results, including their implications in characteristic zero.

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