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Some Progress on Fulton's Local-Global Question

Fulton posed the question of whether a variety that locally resembles a quotient of a smooth variety by a finite group must globally be a quotient of a smooth variety by a finite group. In this talk, we discuss recent progress on this question, specifically in the context of surfaces with finite abelian quotient singularities. This work provides a reinterpretation of Fulton's question through the lenses of intersection theory, Brauer groups, and derived categories of singularities.