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Resolving some singularities while preserving others.

Resolution of singularities consists in constructing a non-singular model of an algebraic variety. This is done by applying a proper birational map that is a local isomorphism at the smooth points. Often too much information is lost about the original variety if the smooth points are the only ones where the desingularization map is a local isomorphism. In these cases, a desingularization preserving some minimal singularities is necessary. This suggests the question of whether, given a class of singularity types $\mathcal{S}$, it is possible to remove with a birational map all singularities not in $\mathcal{S}$ while still having a local isomorphism over the singularities of type $\mathcal{S}$. We will talk about several instances of this problem and techniques that can be used to solve them.

Joint works with **Edward Bierstone, Sergio Da Silva, and Pierre Milman,** (University of Toronto/Fields Institute).