Contribution ID: **24** Type: **not specified**

Families of minimal varieties with nonproduct cylindrical tangent cones

Thursday, 26 June 2025 17:00 (1 hour)

An old construction by Caffarelli-Hardt-Simon shows that any truncated minimal cone in Euclidean space lies in a large family of minimal submanifolds with isolated conic singularities, the elements of which are not exactly conic. It has been a long-standing open question to carry out some analogue of this construction for minimal varieties with nonisolated 'cylindrical' singular sets. I will discuss a new construction, which is a joint project with Greg Parker, where we construct deformation families of this nature. As has been suspected for some time, this turns out to be quite delicate from an analytic perspective because of an inherent rigidity, which can be recast as a loss of regularity in an iterative solution scheme. This result provides some support for the conjecture that the singular set of a minimal (minimizing?) subvariety must itself be a smooth submanifold once its regularity is better than some threshold.

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