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The epsilon-regularity theorem for Brakke flows near triple junctions

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In a pioneering paper published on JDG in 1993, Leon Simon established a powerful method to demonstrate, among other things, the validity of the following result: if a multiplicity one minimal k -surface (stationary varifold) is sufficiently close, in the unit ball and in a weak measure-theoretic sense, to the stationary cone given by the union of three k -dimensional half-planes meeting along a $(k-1)$ -dimensional subspace and forming angles of 120 degrees with one another, then, in a smaller ball, the surface must be a $C^{1,\alpha}$ deformation of the cone. In this talk, I will present the proof of a parabolic counterpart of this result, which applies to general classes of (possibly forced) Brakke flows. I will particularly focus on the apparent need of an assumption, which is absent in the elliptic case, and which, on the other hand, is satisfied by both canonical multi-phase Brakke flows and Brakke flows obtained by elliptic regularization with $\text{mod}(3)$ coefficients: these are the main classes of Brakke flows for which a satisfactory existence theory is currently available and triple junction singularities are expected. This is a joint work with Yoshihiro Tonegawa (Institute of Science Tokyo).

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