

Institute for Mathematics and its Applications
2011 Seminar Series: 13
University of Wollongong

Title: The nature of singularities for type-I mean curvature flow

Speaker: Nam Q. Le (Columbia University, USA and Tan Tao University, Vietnam)

Time and Date: 1:30pm, Friday, 20 January 2012

Location: Room 15.113 (Access Grid Room)

Abstract: Mean curvature flow is the evolution of a hypersurface moving with normal velocity equal to its mean curvature vector. If the initial hypersurface is compact then the flow will develop singularities in finite time. Type-I flows are flows having comparable upper bound and lower bound on the blow-up rate of the second fundamental form near the first (possible) singularity time. In this talk, we will present some recent results on the nature of singularities of compact Type-I mean curvature flow. We will show that for Type-I flow, the mean curvature controls the flow in the sense that singularities cannot occur if the mean curvature is uniformly bounded. In the case of surfaces, we will show that the mean curvature controls the flow provided that either the Multiplicity One Conjecture of Ilmanen holds or the Gaussian density is less than two. We also give the sharp blow-up rate of the mean curvature of our flow when Type-I singularities occur. Analogies with singularities of Type-I Ricci flow will be also discussed. This talk is based on recent work of the author, some are joint with Natasa Sesum.