

For Favour of posting



The Hong Kong University of Science and Technology

Department of Mathematics

Seminar on Pure Mathematics

Chen's flow for submanifolds of Euclidean space

By

Prof. Glen Wheeler
University of Wollongong

Abstract

Chen's flow is a fourth-order curvature flow motivated by the spectral decomposition of immersions, a program classically pushed by B.-Y. Chen since the 1970s. In curvature flow terms it sits at the critical level of scaling with the most popular extrinsic fourth-order curvature flow, the Willmore and surface diffusion flows. Unlike them however the famous Chen conjecture indicates that there should be no stationary nonminimal data, and so in particular the flow should drive all closed submanifolds to singularities. We investigate this idea, proving that (1) closed data becomes extinct in finite time in all dimensions and for any codimension; (2) singularities are characterised by concentration of curvature in L^n for intrinsic dimension n in $\{2,3,4\}$ and any codimension (a Lifespan Theorem); and (3) for $n=2$ and in one codimension only, there exists an explicit ϵ_2 such that if the L^2 norm of the tracefree curvature is initially sufficiently small, the flow remains smooth until it shrinks to a point, and that the blowup of that point is an embedded smooth round sphere.

Date: ***Thursday, 1 June, 2017***

Time: ***3:00p.m.-4:00p.m.***

Venue: ***Room 4472, Academic Building***
(near Lifts 25&26), HKUST

All are welcome!