THE FIRST TAIWAN GEOMETRY SYMPOSIUM

NOVEMBER 20, 2010, NCTS(SOUTH), NCKU, TAINAN

11:00–12:00   Yng-Ing Lee, National Taiwan University

The Existence of Hamiltonian Stationary Lagrangians

Hamiltonian stationary Lagrangians are Lagrangian submanifolds that are critical points of the area functional under Hamiltonian deformations. They are generalizations of special Lagrangians. By applying singular perturbation, we show the existence of many compact Hamiltonian stationary Lagrangians in every compact symplectic manifold with a compatible metric. Better results can be obtained in Kahler manifolds, and a criterion which ensures the existence of a smooth family of Hamiltonian stationary Lagrangian tori is also derived. The first mentioned result is a joint work with Joyce and Schoen.

13:30–14:30   Kuo-Wei Lee, Academia Sinica

The Mean Curvature Flow of Compact Submanifolds in Higher Codimension

In this talk, we will give two improvements of results of M.-T. Wang and M.-P. Tsui on mean curvature flow in higher codimension [1,2]. Both the curvature condition and lower bound of $*\Omega$ (a geometric quantity) are weakened to obtain the long time existence and convergence of mean curvature flow. We also have some new applications on homotopy theory and on harmonic map theory. This is a joint work with Yng-Ing Lee.

[1] M.-P. Tsui; M.-T. Wang, Mean curvature flows and isotopy of maps between spheres. Comm. Pure Appl. Math. 57 (2004), no. 8, 1110–1126.

[2] M.-T. Wang, Long-time existence and convergence of graphic mean curvature flow in arbitrary codimension. Invent. Math. 148 (2002), no. 3, 525–543.

15:00–16:00   Duy-Minh Nhieu, National Central University

The Isoperimetric Problem in The Heisenberg Group

The classical isoperimetric problem in Euclidean spaces is one of the very oldest problem in analysis and geometry. Folklore attributed the problem and solution to Queen Dido (356–260 BC). We will begin the excursion by first revisiting this old problem then move on to its modern counterpart in the Heisenberg group. The Heisenberg group is the most basic model space in Sub-Riemannian Geometry. It provides a setting where explicit computations can be carried out and conjectures to be tested (to some extend) before moving to the more general, more abstract settings. I will give an account of results and ideas used in the (partial) solutions of this (not yet completely solved problem) which include my joint work with Danielli and Garofalo.

16:10–17:00   Forum

17:30–   Dinner