

LTCC Advanced Course

Title: Calibrated Submanifolds

Basic Details:

- Core Audience: pure
- Course Format: Extended: 5 x 2hr lectures

Course Description:

- Syllabus: Calibrated submanifolds are a special class of volume minimizing submanifolds in Riemannian manifolds endowed with special closed differential forms called calibrations. The prototypical examples of calibrated submanifolds are holomorphic submanifolds of Kähler manifolds. More generally, Riemannian manifolds with special holonomy naturally carry calibrations: besides holomorphic submanifolds, examples of calibrated submanifolds include special Lagrangian submanifolds in Calabi-Yau manifolds and associative and coassociative submanifolds in G_2 manifolds. Aspects of the theory we will discuss include:

1. Introduction to calibrated submanifolds
2. Examples of calibrated submanifolds in flat Euclidean space
3. Singularities and calibrated cones
4. Moduli spaces of calibrated submanifolds; calibrated fibrations

A particular focus of the course will be on special Lagrangian submanifolds.

- Recommended reading: good initial references are:
 - o R. Harvey and B. Lawson, Calibrated geometries. Acta Math. 148 (1982)
 - o D. Joyce, Riemannian holonomy groups and calibrated geometries, Oxford Graduate Texts in Mathematics
- Prerequisites: basic knowledge in differential and Riemannian geometry

Format:

- Brief electronic lecture notes outlining the content of lectures and providing a guide to the literature will be made available during the course.
- Problems and exercises will be made available during the course.
- The course will be organised into 5 - 2h lectures.

Lecturer Details:

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- Lecturer telephone number: