

Mini-workshop on Submanifold Theory

会议手册

同济大学，上海，中国

2019年11月14日-17日

主办单位：同济大学数学科学学院

Mini-workshop on Submanifold Theory

会议时间：2019年11月14日-17日

会议地点：同济大学数学科学学院致远楼101会议室（见地图）

会议组织：

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如有任何问题，请随时与我们联系。

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会议日程

2019-11-14 (Thursday)		
Register Welcome Session		
10:00-11:30	Wu, Peng (Fudan)	Title: Einstein four-manifolds of positive scalar curvature
13:30-15:00	Ding, Qi (Fudan)	Title: Liouville Theorems and Hessian Estimates for Special Lagrangian Equations. Abstract: We will first review history on the classification of entire special Lagrangian graphs over Euclidean space, then talk about our Liouville type theorem for solutions to special Lagrangian equations under a general 'convexity' condition. Moreover, we will discuss interior Hessian estimates in terms of the gradient of the solutions.
Tea Time		
15:15-16:45	Wang, Zhizhang (Fudan)	Title: Entire spacelike hypersurfaces with constant curvature in Minkowski space. Abstract: In this talk, we will review some known results of entire hypersurfaces with constant mean curvature or constant Gauss curvature in the Minkowski space. We prove that, in the Minkowski space, if a spacelike, $n-1$ -convex hypersurface M of constant $n-1$ -Hessian curvature has bounded principal curvatures, then M is convex. Moreover, if M is not strictly convex, after a Lorenze motion, M splits as a product of a $n-1$ -dimensional strictly convex hypersurface and a straight line. We also construct nontrivial examples of strictly convex, spacelike hypersurface M with constant $n-1$ - curvature and bounded principal curvatures.

2019-11-15 (Friday)

10:00-11:30	Li, Haozhao (USTC)	<p>Title: On Ilmanen's multiplicity-one conjecture for mean curvature flow.</p> <p>Abstract: In this talk, we show that if the mean curvature of a closed smooth embedded mean curvature flow in \mathbb{R}^3 is of type-I, then the rescaled flow at the first finite singular time converges smoothly to a self-shrinker flow with multiplicity one. This result confirms Ilmanen's multiplicity-one conjecture under the assumption that the mean curvature is of type-I. As a corollary, we show that the mean curvature at the first singular time of a closed smooth embedded mean curvature flow in \mathbb{R}^3 is at least of type-I. This is joint work with Bing Wang.</p>
13:30-15:00	Sun, Rongze (Tsinghua)	Title: tba
Tea Time		
15:15-16:45	Hu, Jiaqi (Fudan)	<p>Title: On the cone-volume functional, its applications and generalizations.</p> <p>Abstract: The cone-volume functional was originally introduced by Lutwak, Yang and Zhang (LYZ) in 2001 to attack the longstanding Schneider projection problem in convex geometry. It is closely associated with the cone-volume measure of convex bodies and has many applications in the reverse isoperimetric problem and the logarithmic Minkowski problem.</p> <p>In this talk, we will first review the cone-volume functional, especially the solved LYZ conjecture and its applications to the logarithmic Minkowski problem. Then we will report our very recent results on its generalizations and applications, including the variational formula and the extreme problem on the mixed cone-volume functional.</p> <p>This talk is based on the joint work with Xiong Ge, Lu Xinbao and Sun Qiang.</p>

2019-11-16 (Saturday)

10:00-11:30	Xia, Chao (Xiamen)	<p>Title: New Minkowski type formulas for free boundary hypersurfaces in balls and applications.</p> <p>Abstract: In this talk, we will present a family of new Minkowski formulas for free boundary hypersurfaces, or more generally capillary hypersurfaces, in balls.</p> <p>Two applications will be given. On one hand, we use it to classify all stable capillary hypersurfaces in balls to be umbilical ones. On the other hand, we use it to define a class of locally constraint inverse type curvature flows and show a family of Alexandrov-Fenchel's inequalities for free boundary hypersurfaces in balls. The talk based on joint works with Guofang Wang and Julian Scheuer.</p>
13:30-15:00	Yao, Chengjian (Shanghai Tech)	<p>Title: Gravitating Vortices with positive curvature on Riemann sphere</p> <p>Abstract: We prove that gravitating vortex equation on P^1 with positive curvature is solvable if and only if the divisor, i.e. the zeros of the Higgs field, is polystable under the canonical $SL(2,C)$-action. Our method exploits a continuity path starting from Yisong Yang's solution with zero curvature and deforming the coupling constant towards 0. This is a joint work with Mario Garcia-Fernandez and Vamsi Pingali.</p>
Tea Time		
15:15-16:45	Yang, Ling (Fudan)	Title: tba
2019-11-17 (Sunday)		
10:00-11:30	Song, Chong (Xiamen)	<p>Title: Skew Mean Curvature Flow</p> <p>Abstract: The skew mean curvature flow (SMCF), which originates from the study of fluid dynamics, describes the evolution of a codimension two submanifold along its binormal direction. In this talk, I will first introduce the background of the SMCF, and then present a proof of the existence and uniqueness of local solutions to general dimensional SMCF in Euclidean space.</p>

13:30-15:00	Zhu, Miaomiao (Shanghai Jiao Tong University)	<p>Title: Geometric Analysis of a Mixed Elliptic-Parabolic Conformally Invariant Boundary Value Problem</p> <p>Abstract: In this talk, we discuss a systematic treatment of the geometric analysis of a variational problem originating from the nonlinear supersymmetric sigma model of QFT. We develop a general spectrum of methods to solve the corresponding boundary value problem and to analyze the qualitative behavior of the solutions. Our works build upon the impressive advances and vast developments over several decades in the field of two dimensional geometric conformally invariant problems since the fundamental works of Jonathan Sacks-Karen Uhlenbeck, Leon Simon and Michael Struwe etc. in the 1980s.</p>
Tea Time		
15:15-16:45	Xu, Pengfei (Tongji)	Title: tba

地图：

1.会议地点致远楼 101

2.乘坐地铁 10 号线的老师，请从 10 号线 5 号口出，右拐进同济大学正门

3.打车的老师可到赤峰路 200 号门下车，步行向北直行到致远楼

