

几何分析与偏微分方程研讨会

程序册



哈尔滨工业大学数学研究院

2019年1月6日-8日

几何分析与偏微分方程研讨会

2019年1月6日-8日

会议地点：哈尔滨工业大学明德楼 201 室

邀请报告专家：

- 陈兵龙 (中山大学)
- 关 波 (Ohio State University)
- 韩 青 (University of Notre Dame)
- 黄 勇 (湖南大学)
- 简怀玉 (清华大学)
- 麻希南 (中国科学技术大学)
- 戎小春 (Rutgers University)
- 汪徐家 (The Australian National University)
- 徐兴旺 (南京大学)
- Paul Yang (Princeton University)
- 张 希 (中国科学技术大学)
- 张振雷 (首都师范大学)

会议联络人：

- 矫贺明 (18646071120, Email: jiao@hit.edu.cn)
- 隋哲楠 (18249036950, Email: sui.4@osu.edu)

会议日程

1月7日 上午

08:35-08:45	欢迎致辞（尹智、关波）
-------------	-------------

主持人：关波		
08:50-09:30	Paul Yang	待定
09:35-10:15	徐兴旺	Einstein scalar field Lichnerowicz equations
10:20-10:45	合影、茶歇	
10:45-11:25	张振雷	Relative volume comparison of Ricci flow
11:30-12:10	韩青	Asymptotic Expansions of Solutions of the Yamabe Equation and the sigma-k Yamabe Equation near Isolated Singular Points
12:10-14:00	午餐：西苑宾馆	

1月7日 下午

15:00-19:30	自由讨论、晚餐
-------------	---------

1月8日 上午

主持人： 待定		
08:45-09:25	戎小春	Quantitative Maximal Volume Entropy Rigidity
09:30-10:10	张希	Differential geometry of holomorphic vector bundles
10:15-10:30	茶歇	
10:30-11:10	陈兵龙	待定
11:15-11:55	简怀玉	P-Minkowski Problem
12:00-14:00	午餐： 西苑宾馆	

1月8日 下午

主持人： 待定		
14:00-14:40	汪徐家	Locally convex surfaces and related topics
14:45-15:25	麻希南	非线性抛物方程的 Neumann 边值问题
15:30-15:50	茶歇	
15:50-16:30	黄勇	Geometric flows to Minkowski problems
16:35-17:15	关波	Fully nonlinear elliptic equations for conformal deformation of Chern-Ricci curvatures
18:00-19:30	晚餐： 西苑宾馆	

报告题目与摘要

Fully nonlinear elliptic equations for conformal deformation of Chern-Ricci curvatures

关 波 Ohio State University

Abstract. There are several ways to define Chern-Ricci curvatures for the Chern connection on a non-Kähler Hermitian manifold. We introduce a notion of mixed-Chern-Ricci forms, which naturally occur in geometric problems and seem interesting to study, and consider fully nonlinear elliptic equations for their conformal deformation.

In this talk we report our work on a class of more general equations, including a priori estimates and existence results under very general structure conditions. Our work is motivated by the close connections of these equations to problems in non-Kähler complex geometry, and the fact that there have been increasing interests in fully nonlinear pde's beyond the complex Monge-Ampère equation from complex geometry.

If time permits, we shall discuss results on the Dirichlet and Neumann problems for the fully nonlinear equations on real manifolds. We try to understand roles of subsolutions and concavity condition in establishing estimates for second derivatives, and clarify relations between different notions of generalized subsolutions introduced by myself and Székelyhidi.

Asymptotic Expansions of Solutions of the Yamabe Equation and the σ_k Yamabe Equation near Isolated Singular Points

韩. 青 University of Notre Dame

Abstract. We study asymptotic behaviors of positive solutions to the Yamabe equation and the σ_k Yamabe equation near isolated singular points and establish expansions up to arbitrary orders. Such results generalize an earlier pioneering work by Caffarelli, Gidas, and Spruck, and a work by Korevaar, Mazzeo, Pacard, and Schoen, on the Yamabe equation, and a work by Han, Li, and Teixeira on the σ_k Yamabe equation. The proof is based on a study of the linearized operators at radial solutions, following an approach adopted by Korevaar et al.

Geometric flows to Minkowski problems

黄 勇 湖南大学

Abstract. In this talk, we recall how to solve Minkowski problems by using geometric flows, such as Gauss curvature flow. In particular, a recent joint work, the regularity of L_p dual Minkowski problem with Chuanqiang Chen, Yiming Zhao will be particularly discussed.

P-Minkowski Problem

简怀玉 清华大学

Abstract. This talk is based on the joint works with Jian Lu and Xu-Jia Wang. Recalling the Problem and its backgrounds, we report a few results including existence, uniqueness and non-uniqueness under the critical case ($p > n-1$). Then we talk about a few special results on the existence in the critical case ($p = n-1$), although a general existence result has not been obtained.

非线性抛物方程的 Neumann 边值问题

麻希南 中国科学技术大学

摘要. 我们研究凸区域上的常平均曲率方程的 Neumann 问题与预定夹角问题, 考虑对应平均曲率流的平移解问题。我们也研究凸区域上的抛物 k -Hessian 方程以及相应的平移解。它是与王培合, 陈传强、张德凯等合作。

Quantitative Maximal Volume Entropy Rigidity

戎小春 Rutgers University

Abstract. The maximal volume entropy rigidity of Ledrappier-Wang asserts that a compact n -manifold with Ricci curvature bounded below by $-(n-1)$ achieves the maximal volume entropy if and only if the manifold is hyperbolic. In this talk, we will report a recent work that if a manifold almost achieves the maximal volume entropy, then the manifold is diffeomorphic to a hyperbolic space.

Locally convex surfaces and related topics

汪徐家

The Australian National University

Abstract. In this talk we will develop some properties of locally convex surfaces, such as the uniform cone condition, and use them to study related problems, such as the existence of locally convex surfaces with constant Gauss curvature and the Euclidean completeness of locally convex surfaces. In particular we will consider the four vertex theorem for space curves. The classical four vertex theorem states that a planar Jordan curve contains at least four vertices. We show that a closed space curve contains four torsion zero points if it spans a locally convex surface which is a topological disc.

Einstein scalar field Lichnerowicz equations

徐兴旺

南京大学

Abstract. I will discuss the existence and multiplicity results of Einstein scalar fields L-equations under certain necessity conditions. The talk is based on joint work with Dr. NGO Quoc Anh.

Differential geometry of holomorphic vector bundles

张希

中国科学技术大学

Abstract. In this talk, we first recall some classical results on the differential geometry of holomorphic vector bundles, and introduce our recent work on the existence of canonical metrics, Bogomolov type inequalities and the Hermitian Yang-Mills flow. These works are joint with Jiayu Li, Yanci Nie, Chuanjing Zhang and Pan Zhang.

Relative volume comparison of Ricci flow

张振雷

首都师范大学

Abstract. In this talk we present a relative volume comparison of Ricci flow. It is a refinement of Perelman volume non-collapsing estimate of Ricci flow and can be applied to Ricci flow with a collapsing structure at infinity time. It is a joint work with professor Tian.

参会人员

序号	姓名	单位	邮箱地址
1	陈爱红	燕山大学	chenaihong@ysu.edu.cn
2	陈兵龙	中山大学	mcsobl@mail.sysu.edu.cn
3	陈传强	浙江工业大学	chuanqiangchen@zjut.edu.cn
4	陈天聪	重庆大学	tchen6@cqu.edu.cn
5	代国伟	大连理工大学	daiguowei@dlut.edu.cn
6	邓斌	中国科学技术大学	1126684319@qq.com
7	董志杰	哈尔滨工业大学	dongmouren@gmail.com
8	方健	哈尔滨工业大学	jfang@hit.edu.cn
9	付永强	哈尔滨工业大学	fuyongqiang@hit.edu.cn
10	高正焕	中国科学技术大学	gzh2333@mail.ustc.edu.cn
11	葛斌	哈尔滨工程大学	gebin04523080261@163.com
12	关波	Ohio State University	guan@math.ohio-state.edu
13	郭立丰	东北石油大学	lfguo1981@126.com
14	韩青	University of Notre Dame	qhan@math.pku.edu.cn
15	贺慧霞	北京航空航天大学	Hehx@buaa.edu.cn
16	黄勇	湖南大学	huangyong@hnu.edu.cn
17	贾晓含	中国科学技术大学	jiaxiaohan1993@163.com
18	简怀玉	清华大学	hjian@mail.tsinghua.edu.cn
19	矫贺明	哈尔滨工业大学	jiao@hit.edu.cn
20	赖旭东	哈尔滨工业大学	xudonglai@hit.edu.cn
21	李贯锋	哈尔滨工业大学	liguanfeng@hit.edu.cn
22	李科	哈尔滨工业大学	keli@hit.edu.cn
23	刘俊伟	燕山大学	pilotliu13@126.com
24	马明	哈尔滨师范大学	nibuzhidaoweishen@126.com

25	麻希南	中国科学技术大学	xinan@ustc.edu.cn
26	梅新群	中国科学技术大学	15998157794@163.com
27	戎小春	Rutgers University	rong@math.rutgers.edu
28	侍述军	哈尔滨师范大学	shjshi@163.com
29	隋哲楠	哈尔滨工业大学	sui.4@osu.edu
30	孙玉华	南开大学	014130@nankai.edu.cn
31	王明新	哈尔滨工业大学	mxwang@hit.edu.cn
32	汪徐家	The Australian National University	xu-jia.wang@anu.edu.au
33	王智拓	哈尔滨工业大学	wzht@hit.edu.cn
34	吴勃英	哈尔滨工业大学	mathwby@hit.edu.cn
35	吴劲松	哈尔滨工业大学	wjs@hit.edu.cn
36	许全华	哈尔滨工业大学	qxu@univ-fcomte.fr
37	徐兴旺	南京大学	matxuxw@nju.edu.cn
38	薛小平	哈尔滨工业大学	xiaopingxue@hit.edu.cn
39	Paul Yang	Princeton University	yang@math.princeton.edu
40	尹智	哈尔滨工业大学	hustyinzhi@163.com
41	臧经涛	哈尔滨工业大学	zang@hit.edu.cn
42	张超	哈尔滨工业大学	czhangmath@hit.edu.cn
43	张世金	北京航空航天大学	shijinzhang@buaa.edu.cn
44	张希	中国科学技术大学	mathzx@ustc.edu.cn
45	张毅超	哈尔滨工业大学	yichao.zhang@hit.edu.cn
46	张永兵	中国科学技术大学	ybzhang@amss.ac.cn
47	张振雷	首都师范大学	zhleigo@aliyun.com
48	张志军	烟台大学	zhangzj@ytu.edu.cn
49	周春琴	上海交通大学	cqzhou@sjtu.edu.cn