微分几何青年研讨会（线上）

2021 年 8 月 11 日--12 日

上海数学中心

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时间：2021 年 8 月 11 日--12 日

腾讯会议 ID：490 7991 6649

报告人：

陈世炳	中国科学技术大学
葛　剑	北京师范大学
韩小利	清华大学
李　逸	东南大学
钱　超	北京理工大学
魏国栋	中山大学珠海校区
熊　革	同济大学
胥世成	首都师范大学
杨　波	厦门大学
余成杰	汕头大学
郑　恺	同济大学
朱保成	陕西师范大学
朱苗苗	上海交通大学

组织者：丁　琪　上海数学中心；　吴鹏　上海数学中心

联系人：赵晓婷　zhaoxiaoting@fudan.edu.cn

微分几何青年研讨会（线上）日程安排

日期	时间	报告人	主持人	腾讯会议 ID
8 月 11 日 （周三）	9：00- 9：50	葛　剑	华波波	490 7991 6649
	10：00-10：50	魏国栋		
	11：00-11：50	胥世成	丁　琪	
	中午休息			
	13：30-14：20	朱苗苗	来米加	
	14：30-15：20	余成杰		
	15：30-16：20	李　逸	王志张	
	16：30-17：20	陈世炳		
8 月 12 日 （周四）	9：00- 9：50	郑　恺	周武斌	
	10：00-10：50	韩小利		
	11：00-11：50	杨　波	吴　鹏	
	中午休息			
	14：00-14：50	熊　革	杨　翎	
	15：00-15：50	朱保成	张永胜	
	16：00-16：50	钱　超		

Titles and Abstracts

葛　剑 （北京师范大学）

题目：Gehring Link Problem

摘要：In this talk, we will review the classical Gehring link problem in Euclidean space and Gromov's point of view of this problem in Banach space. Then we will take a look at this problem in the sphere and discuss some of its applications.

魏国栋 （中山大学珠海校区）

题目：On the minimizers of curvature functionals in asymptotically flat manifolds

摘要：In this talk, we will discuss the minimizers of curvature functionals (Willmore functional and extrinsic energy functional) subject to an area constraint in asymptotically flat manifolds. Under some certain conditions, we prove that such minimizers exist.

胥世成 （首都师范大学）

题目：Total squared mean curvature of immersed submanifolds in a negatively curved space

摘要：Let $n\geq 2$ and $k\geq 1$ be two integers. Let M be an isometrically immersed closed n-submanifold of co-dimension k that is homotopic to a point in a complete manifold N, where the sectional curvature of $N \leq \delta < 0$. We prove that the total squared mean curvature of M in N and the first non-zero eigenvalue $\lambda_1(M)$ satisfies $\lambda_1(M) \leq (n/\mathrm{Vol}\, M) \int (|H|^2+\delta)\, dv$.

The equality implies that M is minimally immersed in a metric sphere after lifted to the universal cover of N. This completely settles an open problem raised by E. Heintze in 1988. This is a joint work with Y. Niu.

朱苗苗 （上海交通大学）

题目：Quantization for geometric PDEs over 4-manifolds with varying geometric structures

摘要：In this talk, we explore a scheme for investigating the compactness of moduli space of solutions of geometric PDEs over 4-manifolds with varying geometric structures. We shall illustrate this scheme by applying it to a concrete problem, the biharmonic map system over non-collapsed Einstein 4-manifolds with varying metrics. Finally, some future perspectives in this direction will be discussed.

余成杰 （汕头大学）

题目：Sharp Li-Yau gradient estimate on hyperbolic spaces

摘要：In this talk, we will present some joint works with Dr. Feifei Zhao in finding sharp Li-Yau gradient estimates on complete Riemannian manifolds with nonzero

curvature lower bound. In fact, we only obtained some partial results on hyperbolic spaces.

李　逸　（东南大学）

题目：复几何中一类完全非线性偏微分方程，

摘要：在本次报告中，我们将讨论一类复 Monge-Ampere 型偏微分方程及其在复几何中的应用。

陈世炳　（中国科学技术大学）

题目：On the four vertex theorem for space curves.

摘要：The classical four vertex theorem describes a fundamental property of simple closed planar curves. It has been extended to space curves, namely a smooth, simple closed curve in ℝ^3 has at least four points with vanishing torsion if it lies on a convex surface. More recently, Ghomi extended this property to curves lying on locally convex surfaces. In this talk we will discuss an interesting approach using the regularity theory of Monge-Ampere equations. This is based on a joint work with Xu-Jia Wang and Bin Zhou.

郑　恺　（同济大学）

题目：On uniform log K-stability for constant scalar curvature Kaehler cone metrics

摘要：We prove that the existence of constant scalar curvature Kaehler metrics with cone singularities along a divisor implies log K-polystability and G-uniform log K-stability, where G is the automorphism group which preserves the divisor.

韩小利　（清华大学）

题目：Existence of deformed Hermitian-Yang Mills metric.

摘要：First I will introduce the equation of the deformed Hermitian-Yang Mills metric on the holomorphic line bundle of the Kahler manifold. Then I will introduce some existence results of this equation under some assumptions. I will also introduce the corresponding heat equation and some long time existence and convergence of the heat flow.

杨　波　（厦门大学）

题目：Holomorphic functions on a class of Kahler manifolds with nonnegative curvature.

摘要：In this talk we consider a class of noncompact Kahler manifolds with nonnegative curvature. The goal is to study a possible connection between function theory and Type-III solution to the Kahler-Ricci flow.

熊　革 （同济大学）

题目：Sharp affine isoperimetric inequalities for the volume decomposition functionals of polytopes

摘要：In this talk, I will introduce our very recent work on the geometry of polytopes. We prove that the n-th power of the volume functional V_n of polytopes P in ℝ^n, according to dimensions of the spaces spanned by any n outer normal unit vectors of P, is naturally decomposed into n homogeneous polynomials with degree n. Several new sharp affine isoperimetric inequalities for these functionals are established, which essentially characterize the geometric and algebraic structures of polytopes.

朱保成 （陕西师范大学）

题目：The optimization problem on Musielak-Orlicz-Gauss image

摘要：In this talk, we will discuss the Musielak-Orlicz-Brunn-Minkowski theory for convex bodies. In particular, we will show the Musielak-Orlicz Gauss image problem which being used to characterize the Musielak-Orlicz Gauss image measure of convex bodies. Finally, we will talk about the solvability of this problem under the condition that the Musielak-Orlicz function G is decreasing on its second variable.

钱　超 （北京理工大学）

题目：Topology and curvature of isoparametric families in unit spheres

摘要：I will firstly discuss some problems related to isoparametric foliations, and then talk about potentially related studies in topology and curvature properties of isoparametric hypersurfaces and focal submanifolds in unit spheres. This is partially based on joint work with Prof. Zizhou Tang and Prof. Wenjiao Yan.