

1. Igor Belegradek: Towards prescribing the topology of cusps.

Abstract: Each cusp cross-section of a finite volume manifolds of bounded negative curvature is an infranilmanifold, yet little is known on which infranilmanifolds can occur. I shall put the problem in a general context and discuss some recent progress.

2. Gilles Carron: L^2 cohomology of QALE spaces.

Abstract: Quasi Asymptotic Locally Euclidean (QALE in short) manifold are a generalization of Asymptotic Locally Euclidean (ALE) manifold ; QALE space have a geometry at infinity modeled on C^n/G where G is a finite sub group of $SU(n)$. This generalization has been introduced by D. Joyce who show that some of these QALE space carries complete metric with special holonomy (Kahler Einstein or hyperkahler). We will give a topological interpretation of the space of L^2 harmonic forms of some of this space.

3. Jingyi Chen (U. British Columbia, Canada): Recent progress on mean curvature flow in higher codimension

4. Xianzhe Dai (UC Santa Barbara, USA): On the stability of Kahler-Einstein metrics.

5. Wei-Yue Ding (Peking University): "Evolution of Minimal Torus in Riemannian Manifolds".

6. Huijun Fan (Peking Univ): "Martin points on open manifolds of non-positive curvature"

Abstract: Let M be a universal cover of compact Riemannian manifold with non-positive sectional curvature and with Ballmann rank one. We will study the space of minimal positive harmonic functions on M , i.e., the Martin compactification of M . In this lecture, we shall show that for almost all points in infinity, there is a unique minimal positive harmonic function up to a constant multiple, where we consider the Patterson-Sullivan measure at infinity.

The result above provides a partial answer to a conjecture of Yau. This is a joint work with Jianguo Cao and Francois Ledrappier.

7. Bo Guan (Princeton, USA), Complete hypersurfaces of constant curvature function in hyperbolic space

8. Changfeng Gui: Phase Transition, Minimal Surface and De Giorgi Conjecture

Abstract: In 1979 De Giorgi conjectured that some entire solutions to the stationary

Allen-Cahn equation, which is a well-known model in phase transition, must only depend on one direction if the dimension is less than 9. The conjecture is closely related to the Bernstein problem in geometry on the complete minimal graph surfaces in the entire space. The conjecture is completely proven for dimensions 2 and 3. Recently there are significant progress in higher dimensions. In this talk, I will explain the connection of the conjecture with phase transition and minimal surfaces, discuss the recent progresses.

9. Luis Guijarro (Madrid, Spain): Nonnegative curvature and twisted bundles

Abstract: An open and nonnegatively curved manifold is diffeomorphic to a vector bundle over some compact submanifold, known as a soul. It is still unclear in many situations how the metric and the topological structure of the manifold interact. In this talk we will review some of the consequences that the nonnegative curvature condition sets on the manifold, and study how the sphericity of the Euler class of the bundle translates into certain rigidity of the metric.

10. Hao Fang (IAS, Princeton, USA): Analytic torsion on Calabi-Yau manifolds

11. Huaiyu Jian (Tsinghua): Ginzburg-Landau Vortex and Mean curvature flow without force

12. An-Min Li (Sichuan U., China): "Orbifold Gromov-Witten Invariants and Surgery from Singularities".

13. Xinan Ma (East China Normal U, Shanghai): "The existence of convex body with prescribed curvature measure".

14. Lei Ni(UCSD, USA): "Local regularity theorems for Ricci flow".

15. Jie Qing (UC Santa Cruz, USA): On the uniqueness of the foliation of spheres of constant mean curvature in asymptotically flat 3-manifolds

Abstract: In this talk we discuss constant mean curvature surfaces in asymptotically flat 3-manifolds. We prove that, in an asymptotically flat 3-manifold with positive mass, stable spheres of given constant mean curvature near infinity are unique. Therefore we are able to conclude that there is a unique foliation of stable spheres of constant mean curvature in an asymptotically flat 3-manifold with positive mass.

16. Xiaochun Rong (Rutgers U., USA): Fundamental groups of positively curved manifolds with symmetry

17. Yi-Bing Shen: "On complex Finsler geometry".

Abstract: "Let (M,G) be a complex Finsler manifold and TM its holomorphic tangent bundle. It is proved that the Hermitian metric on the whole TM induced from the Finsler metric G is Kählerian if and only if (M,G) is a Kähler manifold with zero holomorphic curvature."

18. Jiaping Wang (Minnesota, USA): Poincare inequality and topology

19. Shuguang Wang: Orientability and degree of Fredholm maps via determinant bundles

Abstract: We define orientability of Fredholm maps through determinant bundles. This geometric approach contrasts the functional analytic approaches of Fitzpatrick-Pejsachowicz-Rabier and Benevieri-Furi. We illustrate by examples that the geometric approach can lead to much simpler proofs of their main results.

20. Gregor Weingart (Hamburg, GERMANY): Bochner identities for G_2 and $Spin_7$ manifolds

Abstract: The Weitzenböck machine for manifolds with G_2 or $Spin_7$ holonomy differs strikingly from other holonomies in that it involves a non-trivial a priori constraint on the second order derivatives of sections of vector bundles associated to the holonomy reduction. The existence of these Bochner identities can be anticipated from the problems encountered in proving the obvious positivity of the Hodge-Laplacian on differential forms using representation theory only. In the talk I want to explain the rather involved proof of the Bochner identities for G_2 and $Spin_7$ -manifolds and discuss their central role in the Weitzenböck machines for these holonomies or on the calculation of heat kernel coefficients.

21. Fred Xavier (Notre Dame, USA): "Recent progress in global injectivity".

22. Nader Yeganefar (Berlin, Germany): On manifolds with quadratic curvature decay

23. Weiping Zhang (Nankai University): An L^2 -Alexander invariant for knot

24. Jian Zhou (Tsinghua University, China): "Localization and dualities in string theory".

25. Xiaohua Zhu (Peking University): Some functionals related to extremal metrics on toric manifolds.