Titles and Abstracts

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2010.7.13-15

Shu-Cheng Chang (National Taiwan University)

Title: Geometric Evolution Problems in a Closed Pseudohermitian 3-Manifold

Abstract: We consider the CR geometrization problems of contact 3-manifolds via the CR curvature flows. An interesting direction is that of finding the CR analogue of the Ricci flow in a pseudohermitian 3-manifold. In particular, I will discuss the related topics via the CR Yamabe flow, the Cartan flow as well as the torsion flow.

Binglong Chen (Sun Yat-sen University)

Title: Complete classification of compact four-manifolds with positive isotropic curvature

Abstract: In this talk, I will discuss the complete classification of diffeomorphism types of all compact four-manifolds with positive isotropic curvature. This in partcular gives affermative anwers of two conjectures in dimension 4 due to Gromov and Schoen seperately. As by-products, we obtain a complete classification of all compact four-manifolds which are locally conformally flat with positive scalar curvature.

Yuxin Ge (University of Paris XII, France)

Title: An almost Schur Theorem on 4-dimensional manifolds

Abstract: In this talk we show that the almost Schur theorem, introduced by De Lellis-Topping, is true on 4-dimensional Riemannian manifolds of nonnegative scalar curvature. This is a joint work with Guofang Wang.

Qing Han (Notre Dame, USA)

Title: Linearization of isometric embedding and its characteristic variety

Abstract: It is an old problem in geometry to study isometric embedding of Riemannian manifolds in Euclidean space of the Janet dimension. Such an isometric embedding can be expressed by a first order differential system. The linearization of this system is highly degenerate. By introducing appropriate parameters, we will reduce this linear system and discuss its characteristic variety.

Xiaojun Huang (Rutgers University, USA)

Title: Holomorphic maps between hyperquadrics with small signature

Abstract: I will discusss a joint paper with S. Baouendi and P. Ebenfelt on the classification for holomorphic maps bewteen hyperquadrics with small signatute.

Jiayu Li (ICTP, Italy)

Title: Two ways to find holomorphic curves in Kähler surfaces

Abstract: Let M be a Kähler surface and Σ be a closed real surface smoothly immersed in M. Let α be the Kähler angle of Σ in M. If $\cos\alpha > 0$, we say Σ is a symplectic surface. We study the problem "*whether there is a holomorphic curve in the homotopy class of a symplectic surface*". In the talk we will present two approaches to the problem, one is the mean curvature flow method, another one is the variational approach.

Ngaiming Mok (Hong Kong University)

Title: Analytic continuation and rigidity of germs of holomorphic isometries and measure-preserving maps between bounded symmetric domains

Abstract: Motivated by problems in Arithmetic Dynamics in the work of Clozel-Ullmo on Hecke correspondences, we prove two types of extension and rigidity results concerning germs of holomorphic maps between bounded symmetric domains. The first type of such results concerns germs of holomorphic isometries $f : (\Omega, \lambda ds_\Omega^2; 0) \rightarrow (\Omega', ds_{\Omega'}^2; 0)$, where Ω and Ω' stand for bounded symmetric domains and Ω is irreducible, ds_Ω^2 resp. $ds_{\Omega'}^2$ stands for the Bergman metric, and λ is an arbitrary normalizing constant. The second type of such results concerns germs of measure-preserving holomorphic maps $g : (\Omega, \lambda d\mu_\Omega; 0) \rightarrow (\Omega, d\mu_\Omega; 0) \times \cdots \times (\Omega, d\mu_\Omega; 0)$ where Ω is an irreducible bounded symmetric domain, $d\mu_\Omega$ stands for the volume form of the Bergman metric, and λ is again an arbitrary normalizing constant.

Jie Qing (UCSC, USA)

Title: Spectral characterization of conformally compact Einstein manifolds with an infinity of positive Yamabe type

Abstract: In this talk I will describe a sharp correspondence between the global geometric properties of a conformally compact Einstein manifold and the conformal invariants of the infinity. We will introduce the scattering operators which capture both the global geometric properties of the bulk space and the conformal structure of the infinity.

Mei-Chi Shaw (Notre Dame, USA)

Title: The Cauchy-Riemann Equations and L^2 Serre Duality On Complex Manifolds

Abstract: In this talk we study the closed range property and boundary regularity of the Cauchy-Riemann equations on domains in complex manifolds. We will discuss the case for pseudoconcave domains and the null space of the $\bar{\partial}$-Neumann operator. Recent results for the Cauchy-Riemann equations on product domains and an L^2 version of the Serre duality on domains in complex manifolds will be discussed (joint work with Debraj Chakrabarti).

Yihu Yang (Tongji University)

Title: A remark on singularities of the period mapping (after Wilfried Schmid)

Weiping Zhang (Nankai University)

Title: Generelized Witten genus and vanishing theorems.

Zhou Zhang (University of Michigan, USA)

Title: Stability of solutions for complex Monge-Ampere equations over closed manifolds

Abstract: The question on the stability of solutions comes up naturally after the existence result. In a joint work with Slawomir Dinew, we generalized Kolodziej's result for the case of background form being Kähler to the degenerate situation. For the same equation, uniqueness is a straightforward application of stability, but there is also time when the stability result can be applied without much relation to the uniqueness.

Xiaohua Zhu (Peking University)

Title: Kähler-Ricci flow and deformation of complex structures.