

Titles and Abstracts

SPEAKERS IN CUHK:

**Huai-Dong Cao** (Lehigh University, USA & University of Macau, Macau)

Title: Martin compactification of a Cartan-Hadamard surface and applications to Ricci solitons

**Andriy Haydys** (Universität Bielefeld, Germany)

Title: A compactness theorem for the Seiberg-Witten equations with multiple spinors

Abstract: This is a joint project with Th. Walpuski. Motivated by higher dimensional gauge theory, we consider the compactness problem for the Seiberg-Witten equations with multiple spinors in dimension three. We show that a sequence of solutions of the Seiberg-Witten equations has a subsequence converging to a Fueter section, which is a non-linear version of a harmonic spinor.

**Wanmin Liu** (HKUST, Hong Kong)

Title: Bayer-Macri decomposition on Bridgeland moduli spaces over surfaces

Abstract: Bayer and Macri established a determinant line bundle theory on the Bridgeland moduli space over surface, which induced birational geometry of the moduli space via wall-crossing of stability conditions. We find a decomposition of the local Bayer-Macri map and obtain its image in the Néron-Severi group of the moduli space. The geometric meaning of the decomposition is given. As application, we obtain a precise correspondence between Bridgeland walls and Mori walls. Some toy models on Hilbert scheme of points will be discussed.

**Andrei Pajitnov** (Université de Nantes, France)

Title: Arnold conjecture, Floer homology, and augmentation ideals of finite groups

Abstract: Let  $H$  be a generic time-dependent 1-periodic Hamiltonian on a closed weakly monotone symplectic manifold  $M$ . We construct a refined version of the Floer chain complex associated to  $(M, H)$ , and use it to obtain new lower bounds for the number  $P(H)$  of the 1-periodic orbits of the corresponding hamiltonian vector field. We prove in particular that if the fundamental group of  $M$  is finite and solvable or simple, then  $P(H)$  is not less than the minimal number of generators of the fundamental group.

**Sheng Rao** (Wuhan University, China)

Title: Several special complex structures and their deformation properties

**Takahashi Ryosuke** (Harvard University, USA)

Title: The moduli space of  $S^1$ -type zero loci for  $\mathbb{Z}/2$ -harmonic spinors and compactness of  $\mathrm{PSL}(2; \mathbb{C})$  connections

**Weiwei Wu** (Université de Montréal, Canada)

Title: Homological mirror symmetry for special isogenous tori

Abstract: We will explain a homological mirror symmetry result of  $T^{2n}$  with non-standard symplectic form. By computing their Fukaya categories, we show that their mirrors are certain abelian varieties over the Novikov field. This also shows derived Fukaya category is a complete invariant for this class of symplectic tori, which is the mirror of Orlov's reconstruction theorem for Abelian varieties.

Speakers in Macau:

**Conan Leung** (CUHK) & **Ziming Ma** (Tsinghua University & Harvard University)

Title: Witten-Morse theory and mirror symmetry. Part I and II

**Kwokwai Chan** (CUHK) & **Qin Li** (CUHK)

Title: A mathematical foundation of quantum field theory. Part I and II

**Zhongtao Wu** (CUHK)

Title: Topology in chemistry and biology