第134回　香川セミナー

日時: 2025年2月22日 (土) 13:30 – 17:30

会場: 香川大学教育学部幸町北8号館2階821講義室

アクセス: 高松駅から徒歩20分またはJR高徳線「高松駅」から「昭和町駅」下車後徒歩5分.
∗ 昭和町駅は交通系ICカードが使えないのでご注意下さい.
∗ その他のアクセスはこちら.

プログラム

13:30 – 15:00　四ッ谷 直仁 (香川大学)
Extremal Kähler metrics and destabilizers for relative K-polystability of toric varieties

15:30 – 17:00　Lars Martin Sektnan (Chalmers University of Technology)
Constant scalar curvature Kähler metrics and semistable vector bundles

17:00 – 17:30　質疑応答

世話係: 高野 啓児 (香川大, takano.keiji@kagawa-u.ac.jp) (お問い合わせ先)
四ッ谷 直仁 (香川大)
宮﨑 隼人 (香川大)
大石 健太 (香川高専)
桑田 健 (香川高専)
内藤 浩忠 (元香川大)
竹内 博 (元四国大)
高橋 宏明 (元香川高専)

The 134th Kagawa Seminar

Date: Saturday, February 22nd, 2025, 13:30 – 17:30

Venue: Room 821, Saiwai-cho North bldg. No. 8, Faculty of Education, Kagawa University

Program

13:30 – 15:00 Naoto Yotsutani (Kagawa University)
Extremal Kähler metrics and destabilizers for relative K-polystability of toric varieties

15:30 – 17:00 Lars Martin Sektnan (Chalmers University of Technology)
Constant scalar curvature Kähler metrics and semistable vector bundles

17:00 – 17:30 Discussion

Organizers:

Keiji Takano (Kagawa University, takano.keiji@kagawa-u.ac.jp) (Contact)

Naoto Yotsutani (Kagawa University)

Hayato Miyazaki (Kagawa University)

Kenta Oishi (National Institute of Technology, Kagawa College)

Ken Kuwata (National Institute of Technology, Kagawa College)

Hirotada Naito (Formerly of Kagawa University)

Hiroshi Takeuchi (Formerly of Shikoku University)

Hiroaki Takahashi (Formerly of National Institute of Technology, Kagawa College)

Abstracts

Naoto Yotsutani (Kagawa University)

Title: Extremal Kähler metrics and destabilizers for relative K-polystability of toric varieties

Abstract: It was conjectured by Székelyhidi that a polarized manifold admits an extremal Kähler metric in the class of polarization if and only if it is relatively K-polystable. Furthermore, the folklore conjecture states that every toric Fano manifold admits an extremal Kähler metric in its first Chern class. For a given toric Fano manifold X, we provide a destabilizing convex function on the corresponding moment polytope P to clarify the relative K-unstability of X. Applying this criteria into a certain toric Fano manifold, we prove that there exists a toric Fano manifold of dimension 10 that does not admit an extremal Kähler metric. This talk is based on joint works with B. Zhou, D. Hwang and H. Sato.

Lars Martin Sektnan (Chalmers University of Technology)

Title: Constant scalar curvature Kähler metrics and semistable vector bundles

Abstract: A central question in Kähler geometry is if a Kähler manifold admits a canonical metric, such as a Kähler-Einstein metric or more generally a constant scalar curvature Kähler (cscK) metric, in a given Kähler class. The Yau-Tian-Donaldson conjecture predicts that this is equivalent to an algebraic notion of stability. In this talk, I will discuss a necessary and sufficient condition for the projectivisation of a slope semistable vector bundle to admit cscK metrics in adiabatic classes, when the base admits a cscK metric. In particular, this shows that the existence of cscK metrics is equivalent to K-stability in this setting. Moreover, our construction reduces K-stability to a finite dimensional criterion in terms of intersection numbers associated to the vector bundle. This is joint work with Annamaria Ortu.