Seminar on KSBA Moduli Theory

Fall 2022

Thursday, 18:30-20:30
Jinchunyuan West Building, 2nd Floor

1 Families of Varieties of General Type

Refenence:

János Kollár, Families of varieties of general type, 2022. Chapter $1 \sim 8$.

Schedules:

- Lecture 1 (Sep 22, 2022): History of moduli problems.
  Speaker: Fuxin Xu

- Lecture 2-3 (Sep 29, 2022): One-parameter families.
  Speaker: Qiwei Zhu

- Lecture 4 (Oct 13, 2022): Families of stable varieties.
  Speaker: Junpeng Jiao

- Lecture 5-6 (Oct 27, 2022): Stable pairs over reduced base schemes.
  Speaker: Yu Zou

- Lecture 7 (Nov 10, 2022): Numerical flatness and stability criteria.
  Speaker: Bingyi Chen

- Lecture 8 (Nov 17, 2022): Moduli problems with flat divisorial part.
  Speaker: Xiaowei Jiang

- Lecture 9 (Nov 24, 2022): Moduli of stable pairs.
  Speaker: Bingyi Chen

2 Explicit Examples

- Lecture 1 (Dec 1, 2022): Plane curves.

  Reference: [Hac04].

  Speaker: Ruitong Zhang

- Lecture 2 (Dec 8, 2022): Wall crossing for curves.

  Reference: [Has03].

  Speaker: Fuxin Xu

3 Projectivity

- Lecture 1 (Dec 15, 2022): Kollár's ampleness lemma.

  Reference: [Kol90].

  Speaker: Ruitong Zhang

- Lecture 2 (Dec 22, 2022): Semipositivity theorems for moduli problems.

  Reference: [Fuj18].

  Speaker: Xiaowei Jiang

- Lecture 3-4 (Dec 29, 2022): Projectivity of the moduli space of stable log-varieties.

  Reference: [KP17].

  Speaker: Junpeng Jiao

References

[Ale02] Valery Alexeev. Complete moduli in the presence of semiabelian group action. *Ann. of Math. (2)*, 155(3):611–708, 2002.

[Fuj18] Osamu Fujino. Semipositivity theorems for moduli problems. *Ann. of Math. (2)*, 187(3):639–665, 2018. 2

[Hac04] Paul Hacking. Compact moduli of plane curves. *Duke Math. J.*, 124(2):213–257, 2004. 2

[Has03] Brendan Hassett. Moduli spaces of weighted pointed stable curves. *Adv. Math.*, 173(2):316–352, 2003. 2

[Kol90] János Kollár. Projectivity of complete moduli. *J. Differential Geom.*, 32(1):235–268, 1990. 2

[KP17] Sándor J. Kovács and Zsolt Patakfalvi. Projectivity of the moduli space of stable log-varieties and subadditivity of log-Kodaira dimension. *J. Amer. Math. Soc.*, 30(4):959–1021, 2017. 2

[Laz16] Radu Laza. The KSBA compactification for the moduli space of degree two $K3$ pairs. *J. Eur. Math. Soc. (JEMS)*, 18(2):225–279, 2016.

[PX17] Zsolt Patakfalvi and Chenyang Xu. Ampleness of the CM line bundle on the moduli space of canonically polarized varieties. *Algebr. Geom.*, 4(1):29–39, 2017.

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