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Stability conditions on Fano threefolds of Picard number 1. (English) Zbl 1409.14034
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Summary: We prove the conjectural Bogomolov–Gieseker type inequality for tilt-stable objects on each Fano threefold X of Picard number 1. In view of the previous works [*A. Bayer et al.*, *J. Algebr. Geom.* 23, No. 4, 693–710 (2014; [Zbl 1310.14026](#))], [*A. Bayer et al.*, *Invent. Math.* 206, No. 3, 869–933 (2016; [Zbl 1360.14057](#))] and [*A. Bayer et al.*, *J. Algebr. Geom.* 23, No. 1, 117–163 (2014; [Zbl 1306.14005](#))] on Bridgeland stability conditions, this induces an open subset of geometric stability conditions on $D^b(X)$. We also get a new stronger bound for Chern characters of slope semistable sheaves on X .

MSC:

14F05 Sheaves, derived categories of sheaves, etc. (MSC2010)
14J45 Fano varieties

Cited in **1** Review
Cited in **9** Documents

Keywords:

stability condition; Fano threefolds; Bogomolov–Gieseker type inequality

Full Text: [DOI](#) [arXiv](#)

References:

- [1] Bayer, A., Bertram, A., Macrì, E., Toda, Y.: Bridgeland stability conditions of threefolds II: An application to Fujita’s conjecture. *J. Algebraic Geom.* 23, 693–710 (2014) [Zbl 1310.14026](#) MR 3263665 · [Zbl 1310.14026](#)
- [2] Bayer, A., Macrì, E., Stellari, P.: The space of stability conditions on abelian threefolds, and on some Calabi–Yau threefolds. *Invent. Math.* 206, 869–933 (2016) [Zbl 1360.14057](#) MR 3573975 · [Zbl 1360.14057](#)
- [3] Bayer, A., Macrì, E., Toda, Y.: Bridgeland stability conditions on threefolds I: Bogomolov–Gieseker type inequalities. *J. Algebraic Geom.* 23, 117–163 (2014) [Zbl 1306.14005](#) MR 3121850 · [Zbl 1306.14005](#)
- [4] Bridgeland, T.: Stability conditions on triangulated categories. *Ann. of Math. (2)* 166, 317–345 (2007) [Zbl 1137.18008](#) MR 2373143 · [Zbl 1137.18008](#)
- [5] Cutkosky, S. D.: On Fano 3-folds. *Manuscripta Math.* 64, 189–204 (1989) [Zbl 0704.14032](#) MR 0998485 · [Zbl 0704.14032](#)
- [6] Iskovskikh, V. A., Prokhorov, Yu. G.: Fano varieties. In: *Algebraic Geometry, V*, *Encyclopaedia Math. Sci.* 47, Springer, Berlin, 1–247 (1999) [Zbl 0912.14013](#) MR 1668579 726Chunyi Li · [Zbl 0912.14013](#)
- [7] Maciocia, A., Piyaratne, D.: Fourier–Mukai transforms and Bridgeland stability conditions on abelian threefolds. *Algebr. Geom.* 2, 270–297 (2015) [Zbl 1322.14040](#) MR 3370123 · [Zbl 1322.14040](#)
- [8] Maciocia, A., Piyaratne, D.: Fourier–Mukai transforms and Bridgeland stability conditions on abelian threefolds II. *Int. J. Math.* 27, no. 1, 1650007, 27 pp. (2016) [Zbl 1360.14064](#) MR 3454685 · [Zbl 1322.14040](#)
- [9] Macrì, E.: A generalized Bogomolov–Gieseker inequality for the three-dimensional projective space. *Algebra Number Theory* 8, 173–190 (2014) [Zbl 1308.14016](#) MR 3207582
- [10] Piyaratne, D., Toda, Y.: Moduli of Bridgeland semistable objects on 3-folds and Donaldson–Thomas invariants. [arXiv:1504.01177\(2015\)](#)
- [11] Schmidt, B.: A generalized Bogomolov–Gieseker inequality for the smooth quadric threefold. *Bull. London Math. Soc.* 46, 915–923 (2014) [Zbl 1307.14024](#) MR 3262194 · [Zbl 1307.14024](#)
- [12] Schmidt, B.: Counterexample to the generalized Bogomolov–Gieseker inequality for threefolds. *Int. Math. Res. Notices* 2017, 2562–2566 MR 3658208
- [13] Shen, M.: Rational curves on Fano threefolds of Picard number one. Ph.D. Thesis, Columbia Univ., Ann Arbor, MI (2010) MR 2782335

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