

Minicourse
Bridgeland stability and moduli spaces

Marcos Jardim

UFF, Niterói
04 – 07 February 2020

Presentation of the course

There will be four lectures:

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- Lecture 1: Stability on abelian categories

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- Lecture 2: Bridgeland stability on triangulated categories

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- Lecture 3: Bridgeland stability for surfaces

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- Lecture 2: Bridgeland stability on triangulated categories
- Lecture 3: Bridgeland stability for surfaces
- Lecture 4: Bridgeland stability for threefolds

Stability on abelian categories

Definition and fundamental properties of stability conditions on arbitrary abelian categories.

Main Reference: A. Rudakov, Stability for an abelian category. J. Algebra **197** (1997), 231–245.

Bridgeland stability on triangulated categories

- t-structures on triangulated categories;
- Definition of Bridgeland stability conditions and the space of stability conditions;
- Bridgeland's deformation theorem;
- Local finiteness.

Main references:

- E. Macri, B. Schmidt, Lectures on Bridgeland stability. Preprint arXiv 1607.01262. Section 5.
- T. Bridgeland, Stability conditions on K3 surfaces. Duke Math. J. **141** (2008), 141–291.

Bridgeland stability for surfaces

- Tilting on torsion pairs;
- Construction of Bridgeland stability for surfaces;
- Bertram's nested walls theorem;
- Large volume limit;
- Moduli spaces of Bridgeland stable objects.

Main references:

- E. Macri, B. Schmidt, Lectures on Bridgeland stability. Preprint arXiv 1607.01262. Section 6.
- T. Bridgeland, Stability conditions on K3 surfaces. Duke Math. J. **141** (2008), 141–291.
- A. Maciocia, Computing the walls associated to Bridgeland stability conditions on projective surfaces. Asian J. Math. **18** (2014), 263–279.

Bridgeland stability for threefolds

- Construction of Bridgeland stability for threefolds, after Bayer–Macri–Toda;
- Generalized Bogomolov inequality;
- Structure of walls;
- Asymptotic stability.

Main reference: MJ, A. Maciocia, Walls and asymptotics for Bridgeland stability conditions on 3-folds. Preprint [arXiv:1907.12578](https://arxiv.org/abs/1907.12578).



**KEEP
CALM
AND**

**HEY! HO!
LET'S GO!**