



GEOMETRY SEMINAR

Stability conditions and Fourier-Mukai theory

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Abstract

The notion of Fourier-Mukai transform for abelian varieties was introduced by Mukai in early 1980s. Since then Fourier-Mukai theory turned out to be extremely successful in studying stable sheaves and complexes of them, and also their moduli spaces. I will explain how the Fourier-Mukai techniques are useful to show that the conjectural construction proposed by Bayer, Macri and Toda gives rise to Bridgeland stability conditions on abelian threefolds. First we reduce the requirement of the Bogomolov-Gieseker type inequalities to a smaller class of tilt stable objects which are essentially minimal objects of the conjectural stability condition hearts for a given smooth projective threefold. Then we establish the existence of Bogomolov-Gieseker type inequalities for these minimal objects of abelian threefolds by showing certain Fourier-Mukai transforms give equivalences of abelian categories which are double tilts of coherent sheaves. Part of this is a joint work with Antony Maciocia.

Date: December 7, 2015 (Monday)

Time: 3:00 – 4:00pm

Place: Room 210, Run Run Shaw Bldg., HKU