School of Mathematics
Tata Institute of Fundamental Research

03 February, 2025

N O T I C E

Jochen Heinloth (Universität Duisburg-Essen) will deliver a lecture series next week as per the schedule below:

Date : Monday, 10 February; Tuesday, 11 February; Thursday, 13 February;
Friday, 14 February, 2025

Time : 10:00 – 11:00 AM

Venue : Lecture Room AG – 69

Title : Finding good moduli spaces for algebraic stacks

Abstract : Algebraic stacks formalize the interesting geometric structure of moduli problems, i.e. universal parameter spaces for objects of a given type. For most such moduli problems the geometry of these objects quickly explains obstructions for the spaces to be varieties, but in many examples notions of stability have been found that cut out open pieces of the moduli problem that admit well-behaved good moduli spaces. Classically these stability conditions are often defined either through GIT or an explicit notion of Harder-Narasimhan-filtrations. In joint work with Alper and Halpern-Leistner we used a local structure theorem for algebraic stacks to give valuative criteria that characterize those stacks which admit good moduli spaces. In the lectures we will start by motivating the criteria in some classical examples and then try to explain the general result.

At the end I would like to explain how these can be used to prove a conjecture of Bialynicki-Birula and Sommese that predicted a classification of open subsets of quotients by torus actions that admit proper moduli spaces. Interestingly this classification contains many non-projective examples which cannot be explained by a stability condition coming from GIT.

Milind Pilankar