

Regularity on abelian varieties

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Abstract

I will introduce the notion of Mukai regularity for coherent sheaves on abelian varieties, defined via conditions on the supports of the cohomologies of Fourier-Mukai transform complexes. In a very special form, depending on the choice of a polarization, this resembles and in fact strenghtens the classical notion of Castelnuovo-Mumford regularity. The techniques are in part a generalization of an approach of Mumford-Kempf-Lazarsfeld made possible by the use of Mukai's theory.

I will then explain how this can be applied to a variety of questions related to abelain varieties and more general irregular varieties, ranging from the appearance of new interesting invariants for line bundles, to effective results on linear series and defining equations, and to a study of special classes of vector bundles.

This is joint work with G. Pareschi.