Examples of Siegel modular varieties which have a Calabi-Yau model

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Abstract

Siegel modular varieties parametrize abelian varieties, possibly with extra data such as a level-structure. Over the complex numbers they arise as quotients of Siegel upper half space by an arithmetic group. These quotients are quasi-projective and can be compactified in several ways (Satake compactification, toroidal compactifications). Recently some progress has been achieved in the classification of Siegel modular varieties, in particular of Siegel modular threefolds.

So far very few examples are known of Siegel modular varieties of Kodaira dimension 0. In this talk we dicuss examples of Siegel modular threefolds which have a Calabi-Yau model. All known examples are related to the so-called Barth-Nieto quintic and their geometry is intimately related to a special modular form which has an infinite product expansion. In this talk we shall explain these examples and relate their geometric properties to this modular from. This is a report on joint work with V.Gritsenko.