Oberseminar
Institut für Algebraische Geometrie

Yota Maeda

(TU Darmstadt)

On the Kodaira dimension of Shimura varieties of unitary type

In this talk, I will discuss the Kodaira dimension of moduli space. Classically, through the work of Eisenbud, Harris, Farkas, and Mumford, the moduli space of curves is known to be of general type except for finitely many low genera. A key input in these proofs is the existence of the Deligne-–Mumford compactification, which is in a sense a "canonical" compactification of the moduli space. By contrast, defining a "canonical" compactification for the moduli of abelian varieties or K3 surfaces remains an active area of research. Among these, toroidal compactifications give a log general type when considered as a pair together with its toroidal boundary. Based on this, it is natural to ask whether the ambient space itself is of general type. Since these moduli spaces are realized as Shimura varieties for symplectic or orthogonal groups, one can employ the machinery of modular forms; building on work of Freitag, Tai, Mumford, Kondō, Gritsenko, Hulek, Sankaran, and others, they are known to be of general type in a very general setting. We address the remaining types of Shimura varieties, namely unitary cases, and prove the finiteness of those that are not of general type. The proof hinges on two ingredients: a volume formula for arithmetic subgroups derived from Bruhat–Tits theory (joint work with Ohara), and an application of Arthur's and Langlands' classification from the theory of automorphic representations, beyond the techniques of modular forms (joint work with Horinaga and Yamauchi).

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Alle Interessierten sind herzlich eingeladen.