

# Kolloquium über Reine Mathematik

Einladung zu einem Vortrag

**Dienstag, 5. Juli 2022**

17 Uhr, Geom H4

**Prof. Jens Funke  
(University of Durham)**

**Theta Series in Arithmetic and Geometry**

## Abstract:

In how many ways can an integer be represented as the sums of squares? This is very a very classical question, which can be tackled by considering its associate generating series, that is, its theta series. They were (more generally) studied to great success by Hecke as part of his development of the modern theory of modular forms.

For indefinite quadratic forms, the naive question of representation numbers no longer makes sense, but using arithmetic and geometric data one can associate similar series, now called indefinite theta series. Furthermore, this led in the last 20 years to the development of 'mock modular forms' and 'weak harmonic Maass forms' generalizing the classical notions of modular forms. In recent years these forms and indefinite theta series have played an important role in (combinatorial) number theory, arithmetic geometry, but also in mathematical physics.

The talk aims to give an accessible introduction to this topic and to present some recent developments.

**Vor dem Vortrag (ab 16.30 Uhr) stehen im Foyer vor Hörsaal H4  
Kaffee und Tee bereit.**