



THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Algebraic Geometry and Representation Theory Seminar

on Wednesday, Sep 16, 2020
at 16:30

ZOOM: [HTTPS://WEIZMANN.ZOOM.US/J/98304397425](https://weizmann.zoom.us/j/98304397425)

Stephen Kudla
Totonto

On the subring of special cycles on orthogonal Shimura varieties

Abstract:

By old results with Millson, the generating series for the cohomology classes of special cycles on orthogonal Shimura varieties over a totally real field are Hilbert-Siegel modular forms. These forms arise via theta series. Using this result and the Siegel-Weil formula, we show that the products in the subring of cohomology generated by the special cycles are controlled by the Fourier coefficients of triple pullbacks of certain Siegel-Eisenstein series.

As a consequence, there are comparison isomorphisms between special subrings for different Shimura varieties. In the case in which the signature of the quadratic space V is $(m, 2)$ at an even number d_+ of archimedean places, the comparison gives a 'combinatorial model' for the special cycle ring in terms of the associated totally positive definite space.

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