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Arithmetic degrees of special cycles and derivatives of Siegel Eisenstein series. (English) [Zbl 1469.14059]

Kudla initiated a program connecting the Arakelov geometry of special cycles on integral models of orthogonal or unitary Shimura varieties to Siegel or Hermitian modular forms. In this setting arithmetic degrees of special cycles are conjecturally connected to derivatives of Siegel Eisenstein series. In particular, let $V$ be a rational quadratic space of signature $(m,2)$. A conjecture of Kudla relates the arithmetic degrees of top degree special cycles on an integral model of a Shimura variety associated with $\text{SO}(V)$ to the coefficients of the central derivative of an incoherent Siegel Eisenstein series of genus $m + 1$.

In the present paper, the authors prove this conjecture for the coefficients of non-singular index $T$ when $T$ is not positive definite or when $T$ is positive definite and the corresponding special cycle has dimension 0.

Reviewer: Lei Yang (Beijing)

MSC:
14G35 Modular and Shimura varieties
14G40 Arithmetic varieties and schemes; Arakelov theory; heights
11G18 Arithmetic aspects of modular and Shimura varieties
11F27 Theta series; Weil representation; theta correspondences

Keywords:
Shimura variety; orthogonal group; Siegel-Weil formula; kudla program; Whittaker function; special cycle; Green current

Full Text: DOI

References:


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