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Generating series for special cycles on unitary Shimura varieties

Abstract:

The classic result of Hirzebruch and Zagier has inspired a lot of work on the modular properties of generating series constructed from the (classes of) special cycles on certain Shimura varieties and moduli spaces. In this lecture, I will give an overview of relations, both proven and conjectural, in the case of Shimura varieties attached to unitary groups. In particular, old joint results with John Millson about such series constructed from cycles in locally symmetric spaces provide a heuristic suggesting conjectures/speculations in the arithmetic case. Results of a longstanding joint project with Michael Rapoport concerning the generating series for arithmetic 0-cycles will be explained.