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Kuznetsov trace formula for GSp(4) and applications

Trace formulas relate statistics on automorphic forms, which often remain mysterious yet central in number theory, with statistics on geometric or arithmetic quantities, which one hopes to be more explicit and better understood. We will discuss how to establish such a Kuznetsov-type trace formula in the case of the symplectic group GSp(4), and will study the precise analytic behaviour of both the spectral and the arithmetic transforms arising in the formula. These fundamental properties can be used to establish various results on the family of Maaß automorphic forms on GSp(4) in the spectral aspect: the Weyl law, a density result on the non-tempered spectrum, large sieve inequalities, bounds on the second moment of the spinor and standard L-functions, as well as a statement on the distribution of the low-lying zeros of these L-functions.