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## Higher Theta Functions

Higher theta functions are the residues of Eisenstein series on covers of the adelic points of reductive groups. On the one hand, they generalize the Jacobi theta function, which comes from the double cover of  $GL_2$ . On the other, their Whittaker coefficients are not understood, even for higher covers of  $GL_2$ . In this talk I explain why one should expect a series of relations between the coefficients of theta functions on different groups and some new constructions which come close to establishing this, and explain how one may construct an automorphic form on the 4-fold cover of  $GL_2$  with algebraic Fourier coefficients. This is based on on-going joint work with David Ginzburg.