

1154-11-929

**Alex Cowan\***, cowan@math.harvard.edu. *Non-random behaviour in sums of modular symbols.*

We give explicit expressions for the Fourier coefficients of Eisenstein series twisted by Dirichlet characters and modular symbols on  $\Gamma_0(N)$  in the case where  $N$  is prime and equal to the conductor of the Dirichlet character. We obtain these expressions by computing the spectral decomposition of automorphic functions closely related to these Eisenstein series. As an application, we then evaluate certain sums of modular symbols in a way which parallels past work of Goldfeld, O’Sullivan, Petridis, and Risager. In one case we find less cancellation in this sum than would be predicted by the common phenomenon of “square root cancellation”, while in another case we find more cancellation. (Received September 12, 2019)