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**Michael J. Daniel\*** (mjd85@drexel.edu), 3141 Chestnut St., Korman 206, Philadelphia, PA 19104. *Fourier Coefficients, Relations, and Ranks in the Space of Eisenstein Series of a Function Field of a Finite Field.*

The author extends the classical results about Fourier coefficients of Eisenstein series over  $\mathbb{Q}$  to the setting of a function field of a finite field. Using algebraic methods and harmonic analysis, especially the technique of Poisson summation, the author computes Fourier coefficients of Eisenstein series for both the full modular group and congruence subgroups. Using the results for the full modular group, relations between Eisenstein series and ranks of the spaces of Eisenstein series of various integral weights can be computed. (Received September 11, 2009)