1056-11-1463　　　　　**Ben Brubaker***, 2-267 MIT, 77 Massachusetts Ave., Cambridge, MA 02139, and **Catherine Lennon**. *Lennon's work on relations between traces of Frobenius and hypergeometric functions.* Preliminary report.

I will report on my graduate student Cathy Lennon's results describing the trace of Frobenius for various families of elliptic curves in terms of Greene's finite field hypergeometric functions. The story involves three flavors of hypergeometric functions – classical Gaussian hypergeometric functions, their truncated series, and the finite field type described above which have Jacobi sums replacing the usual binomial coefficients. I'll explain the rather surprising way in which these series are related, offer a few unexplained mysteries, and discuss why the finite field type may really be the best for expressing the trace of Frobenius. If time permits, we'll discuss a few of the applications that result from these identities. (Received September 21, 2009)