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Jenny G. Fuselier* (jfuselie@highpoint.edu). *An update on the traces of Hecke operators in level 1 and Gaussian hypergeometric functions.* Preliminary report.

In this talk, we explore some extensions of recent work relating traces of p^{th} Hecke operators in level 1, traces of Frobenius of families of elliptic curves, and values of finite field hypergeometric functions. My previous results carried the restriction $p \equiv 1 \pmod{12}$. Earlier this year, Lennon removed this restriction to prove a formula relating values of a ${}_2F_1$ function over \mathbb{F}_q to traces of Frobenius of families of elliptic curves over \mathbb{F}_q , where $q = p^e$ and $q \equiv 1 \pmod{12}$. In this talk, we provide a general formula for the traces of p^{th} Hecke operators in level 1 (for all $p > 3$) in terms of the trace of Frobenius of a family of elliptic curves over \mathbb{F}_p . Then, we combine this result with Lennon's work to produce formulas for traces of p^{th} Hecke operators in level 1 in terms of hypergeometric functions over \mathbb{F}_{p^2} . (Received August 01, 2011)