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**Jenny G. Fuselier\*** (jfuselie@highpoint.edu). *Traces of Hecke operators in level 1 and Gaussian hypergeometric functions.*

In this talk, we explore some extensions of formulas relating traces of  $p^{\text{th}}$  Hecke operators in level 1, traces of Frobenius of families of elliptic curves, and values of finite field hypergeometric functions. Initial results carried the restriction  $p \equiv 1 \pmod{12}$ . In 2011, 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  $p^{\text{th}}$  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  $p^{\text{th}}$  Hecke operators in level 1 in terms of hypergeometric functions over  $\mathbb{F}_{p^2}$ . (Received February 10, 2014)