1009-11-111 **Audrey A. Terras*** (aterras@math.ucsd.edu), Mathematics Department, University of California at San Diego, La Jolla, CA 92093-0112, and **Anthony Shaheen**. *Fourier Expansions of Complex Valued Modular Forms on Finite Upper Half Planes.*

Consider the finite upper half plane H_q attached to a finite field F_q with q elements. We assume $q = p^n$, that the prime p is odd, and that $n > 1$. See Terras, Fourier Analysis on Finite Groups and Applications, Cambridge, 1999, for the definitions. The group $G = GL(2, F_q)$ acts on H_q by fractional linear transformation. A finite analogue of a modular form will have an invariance property under the action of $GL(2, F_p)$ - the subgroup of G which we view as an analogue of the modular group. We find Fourier expansions of finite analogues of Maass-type Eisenstein series for $SL(2, F_p)$ and $GL(2, F_p)$. For Maass wave forms on the ususal Poincare upper half plane, these Fourier expansions involved K-Bessel functions. In the finite case they involve Kloosterman sums. (Received August 10, 2005)