1003-11-1290  Sasa Radomirovic* (sasar@math.rutgers.edu), Hill Center - Busch Campus, Rutgers, The State University of New Jersey, 110 Frelinghuysen Road, Piscataway, NJ 08854-8019. On the Analogue of the Modular Group in Characteristic $p$.

Classical automorphic functions are complex valued functions on the upper half plane left invariant under a subgroup of finite index of the modular group $PSL(2,\mathbb{Z})$.

Following Weil, we consider the analogue of this classical setting in characteristic $p$. In particular, we investigate the Hecke group and its fundamental domain, and we describe algorithms for constructing modular forms. As expected, our results have a striking resemblance to their classical cousins, examples being the index formula and the formula for the number of cusps. (Received October 04, 2004)