1100-33-157 **Li-Chien Shen*** (shen@ufl.edu), 358 Little Hall, Gainesville, FL 32611. *A Generalization of Ramanujan's Differential Identities for the Fundamental Automorphic Forms of the Hecke Groups.*

A Generalization of Ramanujan's Differential Identities for the Fundamental Automorphic Forms of the Hecke Groups

Abstract. Let $m$ be a positive integer and $\lambda = 2\cos\frac{2\pi}{m}$. The Hecke group $\mathfrak{G}(\lambda)$ is the group of fractional linear transformations generated by $\tau + \lambda$ and $-\frac{1}{\tau}$. Exploiting the properties of the conformal mapping for a fundamental domain of a Hecke group $\mathfrak{G}(\lambda)$, we construct three fundamental automorphic forms satisfying a system of differential equations. For the special case of $\lambda = 1$, we obtain the well-known Ramanujan's differential equations for the Eisenstein series $P, Q$ and $R$: $qP' = \frac{P^2-Q}{12}, qQ' = \frac{PQ-R}{3}$ and $qR' = \frac{PR-Q^2}{2}$. (Received February 06, 2014)