1035-11-529   **Yifan Yang*** (`yfyang@math.nctu.edu.tw`), Department of Applied Mathematics, National Chiao Tung University, 1001 Ta-Hsueh Road, Hsinchu, 300, Taiwan. *Cuspidal divisor class groups of the modular curves $X_1(N)$.*

Let $C_1^\infty(N)$ denote the set of cusps of $X_1(N)$ lying over ∞ of $X_0(N)$, $D_1^\infty(N)$ be the group of divisors of degree 0 on $X_1(N)$ having support in $C_1^\infty(N)$, and $F_1^\infty(N)$ be the multiplicative group of modular functions on $\Gamma_1(N)$ whose divisors are supported on $C_1^\infty(N)$. In this talk we will present an explicit basis for the group $F_1^\infty(N)$. As an application, this gives us a method to determine when a divisor in $D_1^\infty(N)$ is principal, which in turn enables us to determine the group structure of the rational torsion subgroup of the Jacobian $J_1(N)$ generated by $D_1^\infty(N)$. (Received September 10, 2007)