

1086-11-302

Hiren Maharaj* (hmahara@g.clemson.edu), 8543 Hillside Road, Rancho Cucamonga, CA 91701. *Spaces of Modular forms and Algebraic Geometric codes.*

For $\ell = 2, 3, 5$, the author has show that the space of modular forms $M_{2k}(\Gamma_0(\ell^n))$ is naturally isomorphic to one point Riemann-Roch spaces which arise from the modular curve $X_0(\ell^n)$. Riemann-Roch spaces are used to construct algebraic geometric codes. Thus, in principle, algorithms to construct explicit bases for the spaces of modular forms can in principle also be used to construct explicit bases for algebraic geometric does. All of this work was done using Elkies' explicit presentation of the above-mentioned modular curves. In the talk I will discuss this work. (Received August 17, 2012)