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**David S Yuen\*** ([yuen@lakeforest.edu](mailto:yuen@lakeforest.edu)), Math/CS Dept, Lake Forest College, 555 N. Sheridan Rd., Lake Forest, IL 60045. *Paramodular Cusp Forms*.

We classify Siegel modular cusp forms of weight two for the paramodular group  $K(p)$  for primes  $p \leq 491$ . We find that weight two Hecke eigenforms beyond the Gritsenko lifts correspond to certain abelian varieties defined over  $\mathbb{Q}$  of conductor  $p$ . These computations, along with the work of A. Brumer and K. Kramer on classification of abelian surfaces, support the Paramodular Conjecture, which is consistent with the Langlands philosophy and the work of H. Yoshida, and is a partial extension to degree 2 of the Shimura-Taniyama Conjecture. These nonlift Hecke eigenforms share some Euler factors with the corresponding abelian variety  $A$  and satisfy congruences modulo  $\ell$  with Gritsenko lifts, whenever  $A$  has rational  $\ell$ -torsion. (Received September 14, 2007)