1023-11-556 **Martin H. Weissman*** (weissman@math.ucsc.edu), Department of Mathematics, University of California, Santa Cruz, CA 95064. *Multiplying Modular Forms.*

Suppose that G is a reductive group over Q. If f_1 and f_2 are modular forms for G (a concept we will recall in this lecture), it is not clear what it means to multiply f_1 and f_2.

For classical elliptic modular forms, multiplication "works" because within the tensor product of two holomorphic discrete series representations, one can find a third holomorphic discrete series representation. We will discuss how multiplying modular forms relates to this problem in representation theory. We will argue that modular forms for general reductive groups G, under the condition that $G(R)$ has discrete series representations, should form a ring graded by a cone of dominant weights for a maximal compact subgroup of G. (Received September 18, 2006)