

Meeting: 1003, Atlanta, Georgia, SS 23A, AMS Special Session on Representations of Lie Algebras, I

1003-17-884 **Antun Milas*** (amilas@math.albany.edu), 1400 Washington Ave, Department of Mathematics, University at Albany, SUNY, Albany, NY 12222. *N=1 superconformal characters and Weber's functions*. Preliminary report.

It is known that every rational vertex operator with a certain cofiniteness condition yields a $SL(2, \mathbb{Z})$ -module on the vector space spanned by graded traces (or characters). To such a module we will associate a canonical automorphic form and study its properties by using representation theoretical methods. It is interesting that a similar picture persists in the setting of $N = 1$ vertex operator superalgebras (even though the modular invariance is broken). In particular, we will show how the representation theory of $N = 1$ NS superconformal Lie superalgebra can be used to obtain new proofs of some classical modular identities such as the famous Jacobi's Four Square Theorem and a Carlitz's modular, modulus 8 identity. We will also present some generalizations. (Received September 30, 2004)