

1009-17-112

William Jeffrey Cook* (wjcook@gmail.com), Dept of Math - Hill Center, Rutgers University, 110 Frelinghuysen Road, Piscataway, NJ 08854, and **Kailash C Misra** and **Haisheng Li**. *Affine Lie Algebras, Vertex Operator Algebras, and Multisum Identities*.

(joint work with H. Li and K. Misra) Affine Lie algebra representations have many connections with different areas of mathematics and physics. One such connection in mathematics is with number theory and in particular combinatorial identities.

In this talk we consider level k (k a positive integer) integrable highest weight representations of affine Lie algebras. Viewing these representations as vertex operator algebras and using vertex operator algebra methods, we obtain recurrence relations for their characters.

In the case when the algebra is of ADE type and the level $k = 1$, we are able to use these recurrence relations to obtain formulas for the characters. Then taking the principal specialization we obtain families of multisum identities of Macdonald type. (Received August 10, 2005)