

1017-11-75

Jay Jorgenson* (jjorgenson@mindspring.com), Department of Mathematics, CCNY, New York, NY 10031, and **Cormac O' Sullivan** (cormac12@juno.com), Department of Mathematics, Bronx Community College, Bronx, NY 10453. *Dedekind sums for higher-order Eisenstein series.*

In this work we obtain a theory of Dedekind sums associated to higher-order, non-holomorphic Eisenstein series. Following the development for classical Dedekind sums associated to $PSL(2, \mathbf{Z})$, we first derive a generalized Kronecker limit formula for non-holomorphic higher-order Eisenstein series, extending our previous work (see Nagoya Math. Journal 2005). As in the classical setting, Dedekind sums appear as certain roots of unity obtained by studying the multi-valued holomorphic form in the Kronecker limit formula. For certain modular groups, explicit evaluations are established. (Received February 13, 2006)