IDENTITIES ASSOCIATED TO A GENERALIZED DIVISOR FUNCTION AND MODIFIED BESSEL FUNCTION

DEBIKA BANERJEE

Abstract. In his lost notebook, Ramanujan noted down many elegant identities involving divisor functions and the modified K-Bessel function, and some of them are connected with the Fourier series expansion of the non-holomorphic Eisenstein series. Recently, Cohen established interesting generalizations of some of the identities of Ramanujan. In this paper, we study Ramanujan and Cohen-type identities associated to a generalized divisor function and the modified K-Bessel function. In the process, we extend a result of Chandrasekharan and Narasimhan and some identities of Cohen. Furthermore, we obtain a new identity for odd zeta values that can be thought of as a Bessel function analogue of Ramanujan's famous formula for odd zeta values. This is a joint work with Bibekananda Maji.