1067-33-955   **Bruce C. Berndt*** (`berndt@illinois.edu`), Dept. of Mathematics, University of Illinois, 1409 W. Green St., Urbana, IL 61801. *Two Bessel Function Series in Ramanujan's Lost Notebook.*

On page 335 in his lost notebook, Ramanujan recorded without proofs two identities involving finite trigonometric sums and doubly infinite series of Bessel functions. The two identities are intimately connected with the classical *circle* and *divisor problems*, respectively. For each of Ramanujan's identities, there are three possible interpretations for the double series. In joint work with Sun Kim and Alexandru Zaharescu, the two identities have been proved in two of the three interpretations. In this talk, we concentrate on the historical background of the identities and the double Bessel function series identities when they are interpreted in one of two iterated methods of summation. In a sequel to this talk, Sun Kim will speak on the identities from a second viewpoint and also on new identities that arise from our methods. (Received September 16, 2010)