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Jennifer Beineke* (jbeineke@wnec.edu), Department of Mathematics, Western New England College, 1215 Wilbraham Road, Springfield, MA 01119, and **Daniel Bump**. *Oppenheim Summation and Moments of the Riemann Zeta Function*. Preliminary report.

In a 1927 paper, Oppenheim generalized Voronoï's summation formula to obtain a representation for $D_a(x) = \sum_{n \leq x} \sigma_a(n)$ in terms of Bessel functions. Different applications of Oppenheim summation can be used to provide estimates for moments of the Riemann zeta function. We will describe a smooth version of Oppenheim's formula, and we will discuss two ways in which it can be related to the second moment of the Riemann zeta function. The first involves an application to an Eisenstein series identity, and the second leads to a generalization of Atkinson's formula. (Received September 05, 2006)