The Convolution Sum
$\sum_{m<n/16} \sigma(m)\sigma(n-16m)$

Ayşe Alaca, Şaban Alaca, and Kenneth S. Williams

Abstract. The convolution sum $\sum_{m<n/16} \sigma(m)\sigma(n-16m)$ is evaluated for all $n \in \mathbb{N}$. This evaluation is used to determine the number of representations of $n$ by the quadratic form $x_1^2 + x_2^2 + x_3^2 + 4x_4^2 + 4x_5^2 + 4x_6^2 + 4x_7^2 + 4x_8^2$. 

Received by the editors October 11, 2005.

The research of the third author was supported by Natural Sciences and Engineering Research Council of Canada grant A-7233.


Keywords: divisor functions, convolution sums, Eisenstein series.