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Positive-definite quadratic forms representing all odd, positive integers. Preliminary report.

Manjul Bhargava and Jonathan Hanke's famous "290-theorem" states that a positive-definite quadratic form with integer coefficients represents every positive integer if and only if it represents the numbers from 1 up to 290. To prove their theorem it is necessary for them to study 6664 particular quadratic forms in four variables and determine which integers they represent (a significant computational challenge). Our goal is to prove a similar theorem for integer-valued quadratic forms representing all odd numbers. This entails the study of 24888 quadratic forms in four variables. We are able to handle all of these forms with a combination of four different computational methods (one of which is completely new) to reach our desired conclusion. (Received July 28, 2011)