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Gauss Composition and Bhargava Cubes. Preliminary report.

In his work in 1801, Gauss laid foundations to composition of binary quadratic forms by using bilinear equations. This was later reformulated in 2001 by Manjul Bhargava in his Princeton thesis by using planes of symmetries of cubes. In this paper, we describe Gauss composition and give an algorithm to find a cube on which two given quadratic forms live. (Received September 25, 2012)