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Geometry of Numbers and Positive Definite Quadratic Forms.

Applications of Geometry of Numbers (GoN) are prevalent throughout the last 200 years of number theory. Classically recognized GoN proofs include the universality of the sum of four squares over the integers. The speaker, along with Pete L. Clark and Jacob Hicks, has used theoretical and computational generalizations of the techniques in the proof of four squares theorem to provide universality proofs for over 100 additional four-variable positive definite quadratic forms over the integers. Future directions and additional GoN applications will be discussed as time permits. This work has its roots in a UGA VIGRE group led by Pete L. Clark on GoN. (Received September 09, 2013)