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Zeta functions and genus of quadratic forms. (English) Zbl 0702.11022
Enseign. Math., II. Sér. 35, No. 3-4, 263-287 (1989).

In his prize winning paper for the Paris Academy “Grundlagen für die Theorie der quadratischen Formen mit ganzzahligen Koeffizienten” (Ges. Abh. Bd. 1, 3-144) *H. Minkowski* proved (in an appendix) that two nondegenerate integral quadratic forms of rank k , having the same discriminant and the same congruential representation numbers (and the same 2-type if $k \geq 5$) belong to the same genus. The present paper starts out with a reformulation of Minkowski’s proof using modern terminology and removing the restriction on the discriminant. It is then shown how to translate this statement into the language of local (Section 2), adelic (Section 4) and global (Section 5) representation masses. As a consequence it is shown that the representation masses of the form f as well as those of the genus of f determine the genus of f with the same restricting conditions as above.

Reviewer: [R.Schulze-Pillot](#)

MSC:

- [11E12](#) Quadratic forms over global rings and fields
- [11E08](#) Quadratic forms over local rings and fields
- [11E45](#) Analytic theory (Epstein zeta functions; relations with automorphic forms and functions)

Cited in **1** Document

Keywords:

[Gauss sums](#); [integral quadratic forms](#); [representation numbers](#); [representation masses](#); [genus](#)