

Nipp, Gordon L.**Quaternary quadratic forms: computer generated tables.** (English) Zbl 0727.11018

New York etc.: Springer-Verlag. vi, 155 p., with a diskette DM 118.00 (1991).

This book contains tables of reduced representations of each class of integral positive definite primitive quaternary quadratic forms of discriminant less than or equal to 1732, in printed form through discriminant 500 (and discriminants 729 and 1729), complete tables in compressed form on the accompanying 3,5 inch disk, formatted for use in a PC-compatible computer. The classes are grouped into genera; also included are Hasse symbols, the number of automorphs and the level of each such form and the mass of each genus. An appendix lists p-adic densities and p-adic Jordan splittings for each genus in the tables for $p = 2$ and for each odd prime p dividing the discriminant. An introductory section contains terminology, background material with references and explanations of the techniques of computation used.

The tables of *H. Brandt* and *O. Intran* ["Tabellen reduzierter positiver ternärer quadratischer Formen, Leipzig (1958; [Zbl 0082.038](#))] have been very useful for many mathematicians; these tables of quaternary quadratic forms are well-organized and can be very helpful for forming or testing conjectures. Their scope is such that the discriminant 1729 is included, where for the first time an interesting phenomenon shows up [see *A. Schiemann*, Arch. Math. 54, 372-375 (1990; [Zbl 0697.10018](#))].

Reviewer: [M.Peters \(Münster\)](#)**MSC:**

- [11E20](#) General ternary and quaternary quadratic forms; forms of more than two variables
- [11Y99](#) Computational number theory
- [11-04](#) Software, source code, etc. for problems pertaining to number theory
- [11-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to number theory

Cited in 14 Documents**Keywords:**

tables of reduced representations; quaternary quadratic forms; Hasse symbols; automorphs; level; mass; p-adic densities; p-adic Jordan splittings