REFLECTION GROUPS OF THE QUADRATIC FORM $-px_0^2 + x_1^2 + \cdots + x_n^2$ WITH $p$ PRIME

Alice Mark

Abstract: We present the classification of reflective quadratic forms $-px_0^2 + x_1^2 + \cdots + x_n^2$ for $p$ prime. We show that for $p = 5$, it is reflective for $2 \leq n \leq 8$, for $p = 7$ and 17 it is reflective for $n = 2$ and 3, for $p = 11$ it is reflective for $p = 2$, 3, and 4, and it is not reflective for higher values of $n$. We also show that it is non-reflective for $n > 2$ when $p = 13$, 19, and 23. This completes the classification of these forms with $p$ prime.

2010 Mathematics Subject Classification: Primary: 20F55; Secondary: 22E40.

Key words: Reflection groups, Coxeter groups.