CORRIGENDUM

PARITY OF CLASS NUMBERS AND WITT EQUIVALENCE
OF QUARTIC FIELDS

MATH. COMP. 64 (1995), 1711–1715

STANISLAV JAKUBEC, FRANTIŠEK MARKO, AND KAZIMIERZ SZYMICZEK

The proof of the Proposition on p. 1712 incorrectly interprets the nondegeneracy of the Hilbert symbol. Here is the Proposition with corrected proof.

**Proposition.** Let $F$ be a number field such that $s(F) = 2$ and $s_1 = \cdots = s_q = 1$. Then the class number of $F$ is even, and every number field Witt equivalent to $F$ has also even class number.

**Proof.** Take a nondyadic prime $q$ of $F$ with $s(F_q) = 2$ (there must be one since $s(F) = 2$). We show that the order $d$ of the ideal class $[q]$ in the ideal class group of $F$ is even. For suppose $d$ is odd. Then $q^d = (a)$ is a principal ideal and the number $a$ is a $q$-adic prime times a $q$-adic square. Since $-1$ is not a local square at $q$, we have $(-1, a)_q = -1$. On the other hand, we claim that $(-1, a)_p = 1$ for all the remaining primes $p$ of $F$. For a dyadic prime $p$ this is obvious since $-1$ is a local square at $p$ (the local dyadic levels are all equal to 1). When $p$ is a finite nondyadic prime and $p \neq q$, then $a$ is a local unit at $p$ (by our choice of $a$), hence again the Hilbert symbol is trivial. Since $s(F) = 2$, there are no real infinite primes, and at complex infinite primes any Hilbert symbol is trivial. This proves our claim, contradicting Hilbert reciprocity law. Hence $d$ must be even, and so also the ideal class number of $F$ is even.

If $K$ is any number field Witt equivalent to $F$, then $K$ and $F$ have the same Witt equivalence invariant. Hence, if $F$ satisfies Conner’s level conditions, so does $K$, and, as has been already proved, it has even class number.

We take this opportunity to give more precise information about cubic number fields. We have mentioned in the paper that every cubic field is Witt equivalent to a field with odd class number. It is a fact that the representatives of the eight cubic Witt equivalence classes discussed in the paper all have class number one. Thus every cubic field is Witt equivalent to a field with class number one.