A CORRECTION TO "THE SCHUR MULTIPLIERS OF THE MATHIEU GROUPS"

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In the paper [1] mentioned in the title, the authors attempted to determine the Schur multipliers of the five simple Mathieu groups. In rechecking the calculations, we find that an error was made, leading to incorrect results for M_{12} and M_{22}. Our purpose here is to compute again the multipliers of M_{12} and M_{22}, which turn out to be cyclic groups of orders 2 and 6 respectively. The multipliers of M_{11}, M_{23}, M_{24} were originally (and correctly) determined to be trivial.

The error in [1] is quite simple, and lies in the statements leading up to the formula (*) on page 738. We show in § 1 below that (*) is true with an additional condition. In all but two cases of [1] this condition is satisfied. The two exceptions occur in the calculations for the 2-part of the multiplier of M_{12} and M_{22}, and new calculations for these cases are given in § 2 and § 3.

In concluding this introduction, the authors wish to express their thanks to N. Ito for several helpful discussions.

§ 1

Let $\bar{G}$ be a proper covering of the finite group G with $\bar{G}/Z_m \simeq G$, where Z_m denotes the cyclic group of order m. Let $\{c_j\}$ denote those classes of G which do not split in $\bar{G}$. Suppose S is a subgroup of G whose inverse image in $\bar{G}$ is isomorphic to $S \times Z_m$. Let π denote the permutation character of G on the cosets of S. Furthermore, suppose that *if two elements of S of order not prime to m are conjugate in G, then they are already conjugate in S.* Then

$$(*) \qquad \sum \pi(c_j)^2/h_j = n \qquad \text{is integral,}$$

where h_j is the order of the centralizer of an element of c_j. The integer

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