

## Preface

ABSTRACT. Around 1980, G. Mason announced the classification of the quasithin finite simple groups of characteristic 2-type in which all proper simple sections are known; but he neither completed nor published his work. We provide a proof of a stronger theorem classifying those groups, which is independent of Mason. In particular we close this gap in the proof of the classification of the finite simple groups. We also prove a corollary classifying quasithin groups of even type: providing a bridge to the program of Gorenstein, Lyons, and Solomon; their program seeks to produce a new, simplified proof of the classification of the finite simple groups.

The classification of the quasithin simple groups of even characteristic can be thought of as roughly one fourth of the classification of the finite simple groups. The two volumes in this series provide the first proof that each group in this class is a known simple group. This result closes a gap in the classification of the finite simple groups which has existed for over twenty years.

In addition the series is part of an ongoing effort to reorganize and simplify the original proof of the classification of the finite simple groups, and to write the proof down carefully in a relatively short number of pages (e.g., less than ten thousand). The effort includes the “GLS” series of Gorenstein, Lyons, and Solomon, which at the moment consists of the five volumes [GLS94]–[GLS02], but it also includes smaller projects such as [Asc94] and [BG94].

A detailed discussion of these matters appears in the introductions to each of the two volumes in our series. Roughly speaking, the first volume consists of fairly general results on finite groups (with emphasis on quasithin groups) which serve as the foundation for the classification of the quasithin groups. The second volume consists of a proof that the groups listed in our Main Theorem are the simple quasithin groups of even characteristic, all of whose proper simple sections are known simple groups.

We would be remiss if we did not acknowledge the assistance of a number of people:

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We thank Robert Guralnick and Gunter Malle, whose work in [GM02] and [GM04] establishes important results on representations of finite simple groups related to failure of factorization, some of which have been unpublished for years. They relieved us of the need to prove those results; we thank them for providing

us with prepublication copies of their work, and also for reading over the parts of our work which apply their work.

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