Classification of Integral Modular Categories of Frobenius–Perron Dimension pq^4 and p^2q^2

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Abstract. We classify integral modular categories of dimension pq^4 and p^2q^2, where p and q are distinct primes. We show that such categories are always group-theoretical except for categories of dimension $4q^2$. In these cases there are well-known examples of non-group-theoretical categories, coming from centers of Tambara-Yamagami categories and quantum groups. We show that a non-group-theoretical integral modular category of dimension $4q^2$ is equivalent to either one of these well-known examples or is of dimension 36 and is twist-equivalent to fusion categories arising from a certain quantum group.