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On the uniqueness of loops $M(G,2)$

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Abstract: Let G be a finite group and C_2 the cyclic group of order 2. Consider the 8 multiplicative operations $(x,y)\mapsto(x^iy^j)^k$, where $i,j,k\in\{-1,1\}$. Define a new multiplication on $G\times C_2$ by assigning one of the above 8 multiplications to each quarter $(G\times\{i\})\times(G\times\{j\})$, for $i,j\in C_2$. If the resulting quasigroup is a Bol loop, it is Moufang. When G is nonabelian then exactly four assignments yield Moufang loops that are not associative; all (anti)isomorphic, known as loops $M(G,2)$.

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