Construction of the Fourfold Cover of the Mathieu Group M_{22}

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Abstract

We give an explicit construction for the two faithful, irreducible, 16-dimensional representations of $4^{extstyle\cdot}M_{22}$ over the field $mathrmGF(49)$. Then we extend them to the 32-dimensional representation of $4^{extstyle\cdot}M_{22}{:}2$ over $mathrmGF(7)$. Explicit matrices are given on page ??.