

Grundman, Helen G.; Smith, Tara L.; Swallow, John R.
Groups of order 16 as Galois groups. (English) Zbl 0838.12004
Expo. Math. 13, No. 4, 289-319 (1995).

The purpose of this article is to examine a number of problems concerning the realizability of small 2-groups, those of order less than or equal to 16, as Galois groups over arbitrary fields F of characteristic not 2. After a historical introduction from Dedekind (1886) to Jensen (1992) relating to the inverse problem of the Galois theory and the embedding problem, the authors describe in section 2 various techniques for studying the realizability of Galois 2-groups. Rigidity methods are not appropriate because they generally require trivial centers; so the strategy is here to formulate the obstructions in terms of 2-cocycles. Section 3 is a survey of known results for groups of orders 2, 4 and 8. In section 4, the obstructions to the realizability of the fourteen different groups of order 16 are formulated, essentially in $Br_2(F)$ (the kernel of the $\times 2$ in the Brauer group of F), with particular emphasis on the seven nonabelian groups, and the solution fields are constructed. Corrected versions of results previously obtained by Crespo are provided. The article ends with Jensen's results on automatic realizability.

Reviewer's remark: there are too few synthesis articles of this kind.

Reviewer: [R.Massy \(Valenciennes\)](#)

MSC:

[12F12](#) Inverse Galois theory

Cited in **1** Review
Cited in **18** Documents

Keywords:

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