The paper under review continues the study of Schur groups initiated by the second author in part I [ibid. 169, No. 1, 226-247 (1994; Zbl 0838.20055)]. These are “minimal” groups admitting characters with nontrivial Schur index, and are in connection with the Schur subgroup $S(K)$ of the Brauer group $B(K)$, where $K$ is a local field of characteristic 0. The authors revisit the classification of dyadic Schur groups (which admit certain characters with nontrivial 2-local index) and give explicit generators for $S(K)$ in terms of Schur groups. The character theoretic point of view is emphasized and Clifford theory is heavily used.

Many other examples and applications are given, and the paper ends with a nice improvement of Brauer’s splitting theorem. For $\chi \in \text{Irr}(G)$, let $n_\chi$ be the greatest common divisor of $\exp(G)$ and $|G|/\chi(1)$. Then the cyclotomic field $\mathbb{Q}(n_\chi)$ is a splitting field for $\chi$.

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MSC:

20C15 Ordinary representations and characters
20C05 Group rings of finite groups and their modules (group-theoretic aspects)
20C25 Projective representations and multipliers
14F22 Brauer groups of schemes

Keywords:
Schur groups; Schur index; Schur subgroup; Brauer groups; dyadic Schur groups; characters; explicit generators; Clifford theory; Brauer’s splitting theorem; cyclotomic fields; splitting fields

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