UDC 512.542

MATEMATICHESKIE TRUDY
2012, V. 15, N 2, 105–126

FINITE GROUPS WHOSE MAXIMAL SUBGROUPS HAVE THE HALL PROPERTY

N. V. Maslova and D. O. Revin

We study the structure of finite groups whose maximal subgroups have the Hall property. We prove that such a group G has at most one non-Abelian composition factor, the solvable radical $S(G)$ admits a Sylow series, the action of G on sections of this series is irreducible, the series is invariant with respect to this action, and the quotient group $G/S(G)$ is either trivial or isomorphic to $\mathrm{PSL}_2(7)$, $\mathrm{PSL}_2(11)$, or $\mathrm{PSL}_5(2)$. As a corollary, we show that every maximal subgroup of G is complemented.

Key words and phrases: finite group, unsolvable group, maximal subgroup, Hall subgroup, complemented subgroup, normal series, Frattini subgroup, locally finite group, variety of groups.

Received
March 3, 2012

Maslova Natal'ya Vladimirovna
Institute of Mathematics and Mechanics UB RAS,
Ekaterinburg, 620219 Russia;
Ural Federal University,
Ekaterinburg, 620002 Russia.
E-mail: butterson@mail.ru

Revin Danila Olegovich
Sobolev Institute of Mathematics,
Novosibirsk, 630090 Russia.
Novosibirsk State University,
Novosibirsk, 630090 Russia.
E-mail: revin@math.nsc.ru

Translated into English:
Siberian Advances in Mathematics, V. 23, N 3, 196–209 (2013).
DOI: 10.3103/S105513441303005X