MAXIMAL CLONES AND MAXIMAL PERMUTATION GROUPS

PÉTER P. PÁLFY*

Alfréd Rényi Institute of Mathematics
H-1364 Budapest, P.O.Box 127, Hungary
and
Department of Algebra and Number Theory,
Eötvös University, Budapest, Hungary
e-mail: ppp@renyi.hu

In memoriam Professor Kazimierz Glazek

Abstract

A fundamental result in universal algebra is the theorem of Rosenberg describing the maximal subclones in the clone of all operations over a finite set. In group theory, the maximal subgroups of the symmetric groups are classified by the O’Nan–Scott Theorem. We shall explore the similarities and differences between these two analogous major results. In addition, we show that a primitive permutation group of diagonal type can be maximal in the symmetric group only if its socle is the direct product of two isomorphic simple groups, because if the number of simple factors of the socle is greater than two, then the group is contained in the alternating group.

Keywords: maximal clones, Rosenberg’s primality criterion, O’Nan–Scott theorem, primitive permutation groups.

2000 Mathematics Subject Classification: 08A40, 20B35.

*The author has been supported by the Hungarian National Research Fund (OTKA), grant No. T38059.
REFERENCES


Received 25 July 2006
Revised 30 August 2006