

DOI: 10.21538/0134-4889-2016-22-4-163-172

MSC: 20B15, 20D06, 05C25

**STABILIZERS OF VERTICES OF GRAPHS WITH PRIMITIVE
AUTOMORPHISM GROUPS AND A STRONG VERSION OF THE SIMS
CONJECTURE. III ¹**

A. S. Kondrat'ev, V. I. Trofimov

This is the third in a series of papers whose results imply the validity of a strengthened version of the Sims conjecture on finite primitive permutation groups. In this paper, the case of primitive groups with simple socle of classical non-orthogonal Lie type and non-parabolic point stabilizer is considered.

Keywords: finite primitive permutation group, almost simple group, group of classical Lie type, stabilizer of a point, Sims conjecture.

REFERENCES

1. Kondrat'ev A.S. Normalizers of the Sylow 2-subgroups in finite simple groups. *Math. Notes*, 2005, vol. 78, no. 3, pp. 338–346.
2. Kondrat'ev A.S., Trofimov V.I. Stabilizers of graph's vertices and a strengthened version of the Sims conjecture. *Dokl. Math.*, 1999, vol. 59, pp. 113–115.
3. Kondrat'ev A.S., Trofimov V.I. Stabilizers of vertices of graphs with primitive automorphism groups and a strong version of the Sims conjecture, I, II. *Proc. Inst. Steklov Math.*, 2015, vol. 289, suppl. 1, pp. 146–155; 2016. vol. 295, suppl. 1, pp. 89–100.
4. Aschbacher M. On the maximal subgroups of the finite classical groups. *Invent. Math.*, 1984, vol. 76, no. 3, pp. 469–514.
5. Conway J.H., Curtis R.T., Norton S.P., Parker R.A., Wilson R.A. *Atlas of finite groups*. Oxford: Clarendon Press, 1985, 252 p.
6. Bray J.N., Holt D.F., Roney-Dougal C.M. *The maximal subgroups of the low-dimensional finite classical groups*. Cambridge: Cambridge Univ. Press, 2013, (*London Math. Soc. Lect. Note Ser.*; vol. 407), 438 p.
7. Carter R.W. *Simple groups of Lie type*. London: Wiley, 1972, 331 p.
8. Gerono G.C. Note sur la résolution en nombres entiers et positifs de l'équation $x^m = y^n + 1$. *Nouv. Ann. Math.* (2), 1870, vol. 9, pp. 469–471.
9. Gorenstein D. *Finite groups*. New York: Harper and Row, 1968, 528 p.
10. Gorenstein D., Harada R. On finite groups with Sylow 2-subgroups of type A_n , $n = 8, 9, 10, 11$. *Math. Z.*, 1970, Vol. 117, no. 1-4, pp. 207–238.
11. Gorenstein D., Lyons R., Solomon R. *The classification of the finite simple groups*. Providence: Amer. Math. Soc., 1998, Number 3, Part I, (*Ser. Math. Surveys Monogr.*; vol. 40, no. 3), 420 p.
12. Kleidman P.B., Liebeck M.W. *The subgroup structure of the finite classical groups*. Cambridge: Cambridge Univ. Press, 1990, (*London Math. Soc. Lect. Note Ser.*; vol. 129), 304 p.
13. Mason D. Finite simple groups with Sylow 2-subgroups of type $\text{PSL}(4, q)$. *J. Algebra*, 1973, vol. 26, no. 1, pp. 75–97.
14. Zsigmondy K. Zur Theorie der Potenzreste. *Monatsh. Math. Phys.*, 1892, Bd. 3, S. 265–284.

¹Received August 28, 2016

A.S. Kondrat'ev, Dr. Phys.-Math. Sci., N.N. Krasovskii Institute of Mathematics and Mechanics, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, 620990 Russia; Ural Federal University, Yekaterinburg, 620002 Russia, e-mail: A.S.Kondratiev@imm.uran.ru .

V.I. Trofimov, Dr. Phys.-Math. Sci., N.N. Krasovskii Institute of Mathematics and Mechanics, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, 620990 Russia; Ural Federal University, Yekaterinburg, 620002 Russia, e-mail: trofimov@imm.uran.ru .

Cite this article as:

A. S. Kondrat'ev, V. I. Trofimov. Stabilizers of vertices of graphs with primitive automorphism groups and a strong version of the Sims conjecture. III, *Trudy Inst. Mat. Mekh. UrO RAN*, 2016, vol. 22, no. 4, pp. 163–172 .