

Attila Nagy, Csaba Tóth

On the probability that two elements of a finite semigroup have the same right matrix

Comment.Math.Univ.Carolin. 63,1 (2022) 21 –31.

Abstract: We study the probability that two elements which are selected at random with replacement from a finite semigroup S have the same right matrix.

Keywords: congruence; equivalence relation; probability; semigroup

AMS Subject Classification: 20M10, 60B99

REFERENCES

- [1] Ahmedidilir K., Campbell C. M., Doostie H., *Almost commutative semigroups*, Algebra Colloq. **18** (2011), Special Issue no. 1, 881–888.
- [2] Clifford A. H., Preston G. B., *The Algebraic Theory of Semigroups, Vol. I.*, Mathematical Surveys, 7, American Mathematical Society, Providence, 1961.
- [3] Dixon J. D., *The probability of generating the symmetric group*, Math. Z. **110** (1969), 199–205.
- [4] Dixon J. D., Pyber L., Seress Á., Shalev A., *Residual properties of free groups and probabilistic methods*, J. Reine Angew. Math. **556** (2003), 159–172.
- [5] Eberhard S., Virchow S.-C., *The probability of generating the symmetric group*, Combinatorica **39** (2019), no. 2, 273–288.
- [6] Gustafson W. H., *What is the probability that two group elements commute?*, Amer. Math. Monthly **80** (1973), 1031–1034.
- [7] Howie J. M., *An Introduction to Semigroup Theory*, L. M. S. Monographs, 7, Academic Press, London, 1976.
- [8] MacHale D., *Commutativity in finite rings*, Amer. Math. Monthly **83** (1975), no. 1, 30–32.
- [9] Nagy A., *Special Classes of Semigroups*, Advances in Mathematics (Dordrecht), 1, Kluwer Academic Publishers, Dordrecht, 2001.
- [10] Nagy A., *Left reductive congruences on semigroups*, Semigroup Forum **87** (2013), no. 1, 129–148.
- [11] Nagy A., *On faithful representations of finite semigroups S of degree $|S|$ over the fields*, Int. J. of Algebra **7** (2013), no. 1–4, 115–129.
- [12] Nagy A., *Remarks on the paper “M. Kolibiar, On a construction of semigroups”*, Period. Math. Hungar. **71** (2015), no. 2, 261–264.
- [13] Nagy A., *Left equalizer simple semigroups*, Acta Math. Hungar. **148** (2016), no. 2, 300–311.
- [14] Nagy A., Rónyai L., *Finite semigroups whose semigroup algebra over a field has a trivial right annihilator*, Int. J. of Contemp. Math. Sci. **9** (2014), no. 1–4, 25–36.
- [15] Petrich M., *Lectures in Semigroups*, John Wiley & Sons, London, 1977.