Brent Kerby, Jonathan D.H. Smith

Quasigroup automorphisms and symmetric group characters

Comment.Math.Univ.Carolin. 51,2 (2010) 279 –286.

Abstract: The automorphisms of a quasigroup or Latin square are permutations of the set of entries of the square, and thus belong to conjugacy classes in symmetric groups. These conjugacy classes may be recognized as being annihilated by symmetric group class functions that belong to a λ-ideal of the special λ-ring of symmetric group class functions.

Keywords: Latin square, quasigroup, automorphism, λ-ring
AMS Subject Classification: 05B15, 19A22, 20N05

References

[1] Atiyah M.F., Tall D.O., *Group representations, λ-rings, and the J-homomorphism*, Topology **8** (1969), 253–297.
[2] Bryant D., Buchanan M., Wanless I.M., *The spectrum for quasigroups with cyclic automorphisms and additional symmetries*, Discrete Math. **309** (2009), 821–833.
[3] tom Dieck T., *Transformation Groups and Representation Theory*, Springer, Berlin, 1979.
[4] Falcón R.M., *Cycle structures of autotopisms of the Latin squares of order up to* 11, `arXiv:0709.2973v2 [math.CO]`, 2009; to appear in Ars Combinatoria.
[5] Falcón R.M., Martín-Morales J., *Gröbner bases and the number of Latin squares related to autotopisms of order* ≤ 7, J. Symbolic Comput. **42** (2007), 1142–1154.
[6] Knutson D., *λ-rings and the Representation Theory of the Symmetric Group*, Springer, Berlin, 1973.
[7] McKay B.D., Meynert A., Myrvold W., *Small Latin squares, quasigroups and loops*, J. Combin. Designs **15** (2007), 98–119.
[8] Smith J.D.H., *An Introduction to Quasigroups and Their Representations*, Chapman and Hall/CRC, Boca Raton, FL, 2007.
[9] Smith J.D.H., Romanowska A.B., *Post-Modern Algebra*, Wiley, New York, NY, 1999.
[10] Wanless I.M., *Diagonally cyclic latin squares*, European J. Combin. **25** (2004), 393–413.