

Lattices being blocks of skeleton tolerances

Katarzyna Grygiel
Jagiellonian University, Poland

Joint work with Anetta Górnicka and Joanna Grygiel¹

The notion of a tolerance, considered as a natural generalization of congruence for algebraic structures, was introduced by Chajda and Zelinka in [1] and it is of growing importance nowadays. The skeleton tolerance of a lattice, i.e., the tolerance generated by the set of all prime quotients of the lattice, and its factor lattice called a skeleton play a special role in the lattice theory. It was proved by Herrmann ([5]) that every finite lattice is the skeleton of some finite distributive lattice. However, we show that there are lattices that cannot be blocks of the skeleton tolerance of any finite lattice. It is clear for distributive and modular lattices, especially, as it is known that their blocks of the skeleton tolerance are maximal boolean or, respectively, complemented intervals of such lattices ([3]). Our goal is to characterize lattices which can be blocks of the skeleton tolerance in the general case.

REFERENCES

- [1] I. Chajda and B. Zelinka, *Tolerance relations on lattices*, *Casp.Pestov. Math.* 99, 394–399 (1974)
- [2] G. Czédli, *Factor lattices by tolerances*, *Acta Sci. Math. (Szeged)* 44, 35–42 (1982)
- [3] A. Day and Ch. Herrmann, *Gluing of modular lattices*, *Order* 5, 85–101 (1988)
- [4] J. Grygiel, *The concept of gluing for lattices*, *Wydawnictwo WSP, Czestochowa* (2004)
- [5] Ch. Herrmann, *S-verklebte Summen von Verbänden*, *Math. Z.* 130, 255–274 (1973)

`grygiel@tcs.uj.edu.pl`

¹This research was supported by the NSC of Poland, grant number 2011/01/B/HS1/00944