On lattices with a neutral pair of elements among generators

A. G Gein
Ural Federal University, Yekaterinburg, Russia
a.g.geyn@urfu.ru

N. A. Minigulov
Ural Federal University, Yekaterinburg, Russia
anikola-minigulov@mail.ru

Studying the structure of a lattice often relies on distinguishing elements with certain good properties, for instance, distributive, standard, or neutral elements of the lattice. For example, a pair of elements a and b is called *distributive* in a lattice L if $c \wedge (a \vee b) = (c \wedge a) \vee (c \wedge b)$ for any element c [1].

We call a pair of elements a and b is called *neutral* in a lattice L if $(x \vee a) \wedge (x \vee b) \wedge (a \vee b) = (x \wedge a) \vee (x \wedge b) \vee (a \wedge b)$ for any element x.

Theorem. *The lattice in Figure is generated by the elements* a, b *and* c *and the pair (*a, b*) is neutral. Conversely, let a lattice be generated by elements* a, b *and* c *such that the pair (*a, b*) is neutral. Then the lattice is a homomorphic image of the lattice in Figure.*

The proof of the theorem is based on the main results of the paper [2].

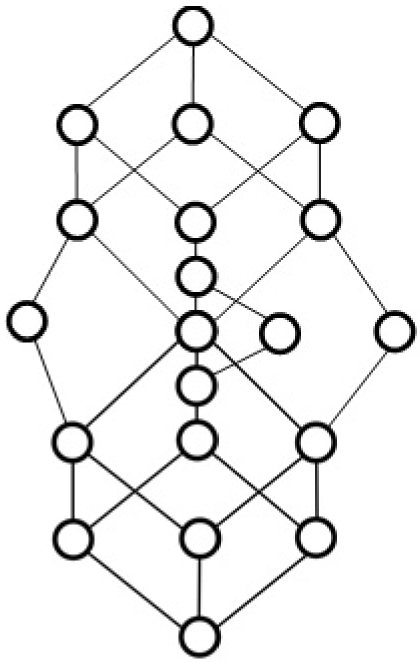

Figure.

References

[1] M. Suzuki, *Structure of a group and the structure of its lattice of subgroups*, Springer-Verlag, Berlin, Heidelberg, 1956.

[2] A. G. Gein, M. P. Shushpanov, The minimal system of defining relations of the free modular lattice of rank 3 and lattices close to modular one. *Mathematics and Statistics* **2(1)** (2014) 27–31.