

## On finite groups generated by involutions

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The problem of classification of all finite 2-groups generated by three involutions appears to be difficult. In [1] classification of metabelian groups with this condition was announced and also the list of such groups with elementary abelian commutator subgroups was presented.

In [2] was proved that finite 2-groups generated by three involutions of exponent 4 have order  $\leq 2^{10}$  and they are classified.

In present communication we announce two theorems, the first of which is considered in the class of all finite groups.

### **Theorem 1.**

For any finite group  $A$  generated by involutions there exists a finite group  $B$  generated by three involutions with a series of subgroups:

$$1 \leq N \leq G \leq B, \text{ where}$$

$$N \trianglelefteq B, G/N \simeq A.$$

The proof of theorem 1 with some additional considerations implies theorem 2.

### **Theorem 2.**

There exist finite 2-groups generated by three involutions of arbitrarily large derived length.

## References

- [1] A. D. Ustyuzhaninov. Finite 2-groups generated by exactly three involutions. In: All-union algebr. symposium (1975) (in Russian), abstracts, part I, Gomel, (1975) 72.
- [2] Y. Berkovich, Z. Janko, Groups of prime power order, Volume **2**, Walter de Gruyter, Berlin, N.Y., 2008.