

Problems on structure of finite quasifields and projective translation planes

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This is joint work with Olga Kravtsova

Closely related problems of the construction and classification of different classes of finite non-Desargues translation planes and quasifields are being studied since in first of the last century; researches use computer calculations from 1950-th.

We introduce the orders of loop elements as a generalization of orders of group elements and similarly left and right orders. The set of orders (or left orders) of all elements of a loop is called *a spectrum* (resp., a left spectrum). For any finite proper quasifield and semifield S we study maximal subfields, their possible orders, automorphisms, *spectrums* of the loop $S^* = (S \setminus \{0\}, \circ)$ and the hypothesis: for any finite semifield S the loop S^* is one-generated.