Steiner Loops

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If the order of any product of two different translations of a finite Steiner quasigroup of size $n > 3$ is odd, then the group G generated by the translations of the corresponding Steiner loop S of order $n + 1$ contains the alternating group of degree $n + 1$. For extensions L of the group of order 2 by the Steiner loop S the group generated by all translations of L is an extension of an elementary abelian 2-group Θ by G. The group Θ has order 2^n, respectively 2^{n-1} depending whether n is odd or even.

Moreover, we thoroughly study the relations between such extensions L and oriented Steiner triple systems in order to obtain more detailed knowledge about these loops L, about the structure of their automorphism groups and the isomorphism classes.