

Arithmetic of Finite Semifields

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Finite Semifields are division algebras in which multiplication is not assumed to be associative nor commutative. As such, they are natural generalisations of their more famous cousins, Finite Fields. Dickson showed in the early 1900s that nontrivial finite semifields exist, unlike the case of finite (associative) division rings. Since then, semifields have been studied for a wide variety of reasons, with applications in finite geometry, PN functions, and rank-metric coding.

In this talk we will survey the history of constructions and applications of semifields. We will discuss recent developments in computational classifications, and new results on multiplicative and additive complexity.