

# A new family of additive designs

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## Abstract

In this paper we construct a family of  $2$ - $(q^n, sp^2, \lambda)$  additive designs  $\mathcal{D} = (\mathcal{P}, \mathcal{B})$ , where  $q$  is a power of a prime  $p$  and  $\mathcal{P}$  is a  $n$ -dimensional vector space over  $\text{GF}(q)$ , and we compute their parameters explicitly. These designs, except for some special cases, had not been considered in the previous literature on additive block designs.

*Keywords:* Block designs, additive designs.

*Math. Subj. Class. (2020):* 05B05, 05B25, 05B07

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# Nova družina aditivnih dizajnov

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## Povzetek

V tem članku konstruiramo družino  $2$ - $(q^n, sp^2, \lambda)$  aditivnih dizajnov  $\mathcal{D} = (\mathcal{P}, \mathcal{B})$ , kjer je  $q$  potenca praštevila  $p$  in  $\mathcal{P}$   $n$ -dimenzionalen vektorski prostor nad  $\text{GF}(q)$ , in natančno izračunamo njihove parametre. Ti dizajni, razen v nekaj posebnih primerih, niso bili obravnavani v dosedanji literaturi o aditivnih blok dizajnih.

*Ključne besede:* Blok dizajni, aditivni dizajni.

*Math. Subj. Class. (2020):* 05B05, 05B25, 05B07

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