

## A $m\Theta$ approach of the algebraic theory of linear codes

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### Abstract

Let  $k, n$  and  $p$  be elements of  $\mathbb{N}^*$  such that  $2 \leq p : p$  prime;  $k \leq n$ . Let  $\mathbb{F}_p = \frac{\mathbb{Z}}{p\mathbb{Z}}$ , and  $\mathbb{F}_{p^2} = \frac{\mathbb{Z}_{p^2}\mathbb{Z}}{p\mathbb{Z}_{p^2}\mathbb{Z}}$ , the prime modal  $\Theta$ -valent field ( $m\Theta f$ ) with  $p^2$  elements as defined by F. Ayissi Eteme in [5]. The purpose is to define on the modal  $\Theta$ -valent set ( $m\Theta s$ )  $\left( \frac{\mathbb{Z}_{p^2}\mathbb{Z}}{p\mathbb{Z}_{p^2}\mathbb{Z}}, F_\alpha \right)$  a notion of linear code which respects its structure of  $m\Theta s$ .

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**Keywords:** modal  $\Theta$ -valent set ( $m\Theta s$ ); modal  $\Theta$ -valent ( $m\Theta$ ) code ;  $m\Theta$  linear code;  $m\Theta$  field;  $m\Theta$  basis;  $m\Theta$  vector space ( $m\Theta vs$ ).