

**Universidad de Puerto Rico
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Facultad de Ciencias Naturales
Departamento de Matemáticas**

SEMINARIO MATEMATICAS DISCRETAS

On rank and kernel of Z_4 -linear codes

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A code C is a quaternary linear code if C is a subgroup of Z_4^n . The rank and dimension of the kernel for Z_4 -linear codes, which are the corresponding binary codes of quaternary linear codes, are studied. The possible values of these two parameters for Z_4 -linear codes, giving lower and upper bounds, are established. For each possible rank r between these bounds, the construction of a Z_4 -linear code with rank r is given. Equivalently, for each possible dimension of the kernel k , the construction of a Z_4 -linear code with dimension of the kernel k is given.

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