



Systems and Control Group Seminar

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Mathematics Department, University of Aveiro

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Self-dual Convolutional Codes

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Abstract

Convolutional codes form a class of error-correcting codes which is mainly used for sequential encoding and decoding of a stream of data. They are a generalization of the classical block codes to the polynomial setting, i.e. a convolutional code is defined as a submodule over a polynomial ring. For block codes, the subclass of self-dual codes has been widely investigated, whereas there is not much known about self-dual convolutional codes in the general case. In this talk, we will introduce self-dual convolutional codes, give criteria to check whether a convolutional code is self-dual as well as some basic properties of self-dual convolutional codes. Furthermore, we will present two construction methods which allow to build self-dual convolutional codes from other self-dual convolutional codes of shorter length and investigate some properties of these constructions. Finally, we give a classification of all self-dual convolutional codes of rate $\frac{1}{2}$ and of rate $\frac{2}{4}$.

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