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Summary: A New graph distance concept introduced for certain coding techniques helped in their design and analysis as in the case of distance-preserving mappings and spectral shaping codes. A graph theoretic construction, mapping binary sequences to permutation sequences and inspired from the $k$-cube graph has reached the upper bound on the sum of the distances for certain values of the length of the permutation sequence. The new introduced distance concept in the $k$-cube graph helped better understanding and analyzing for the first time the concept of distance-reducing mappings. A combination of distance and the index-permutation graph concepts helped uncover and verify certain properties of spectral null codes, which were previously difficult to analyze.

MSC:
94B05 Linear codes (general theory)
94B10 Convolutional codes
94C15 Applications of graph theory to circuits and networks
94A24 Coding theorems (Shannon theory)

Keywords:
graph theory; distance mappings; spectral codes; cube graph; index permutation graph

Full Text: DOI

References:


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