THE CHINESE UNIVERSITY OF HONG KONG
Institute of Network Coding
and
Department of Information Engineering
Seminar

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On the Construction and Decoding of Cyclic LDPC Codes

by

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Date   :   **30 April 2014 (Wednesday)**
Time   :   **11:00 am - 12:00 pm**
Venue :   **Room 833, Ho Sin Hang Engineering Building**
             The Chinese University of Hong Kong

Abstract

Cyclic low-density parity-check (LDPC) codes form an important class of structured LDPC codes. In this talk, we will focus on the construction and decoding of this class of codes. Two algebraic constructions are presented. The first construction is based jointly on idempotents and modular Golomb rulers. The second construction is based on pseudo-cyclic maximum-distance-separable (MDS) codes with two information symbols. The properties of the constructed codes are investigated.

For decoding, the automorphism group of a cyclic code is exploited to enhance the iterative performance. The basic idea is to construct nonequivalent parity-check matrices via column permutations. The applicability of the decoding method is studied for the two constructions mentioned above. Simulation results show that for the second construction, the automorphism group can significantly enhance the iterative decoding performance.

Biography

Dr. Chao Chen received the Ph.D. degree in communication and information systems from Xidian University in 2010. From 2010 to 2014, he worked as an engineer for China Academy of Space Technology (Xi'an). Now he is a postdoctoral research fellow in the Institute of Network Coding. His research interests include information theory and coding theory.

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