



istanbul matematiksel bilimler merkezi
istanbul center for mathematical sciences

Istanbul Discrete Mathematics Meetings

GRAPHS IN MODERN CODING THEORY

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Abstract

The field of error control coding deals with reliable transmission of information over noisy channels while using power and bandwidth resources efficiently. This is done by adding redundancy to the information sequence at the transmitter (encoding), and making use of this redundant information at the receiver to recover the original information sequence (decoding). Error control coding, or as many prefer to call it, coding theory lies in the intersection of engineering and mathematics, due to the algebraic nature of several well-known code families, including Bose-Ray Chaudhuri-Hocquenghem (BCH) and Reed-Solomon (RS) codes.

In the last fifteen years, however, the focus has shifted more and more to randomly constructed codes with little or no algebraic structure. On the other hand, these new codes, which constitute the so-called modern coding theory, utilize iterative decoding on bipartite graphs, which results in a number of problems caused by graph structures. In this talk, some of these graph-related problems will be covered along with the current role of graphs in error control coding.

Date: Friday, May 14, 2010

Time: 11:00

Place: IMBM Seminar Room, Boğaziçi University