

Mathematical Colloquia

Monday, 14 March 2022

17:15 h, lecture room B6 (ExWi)

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Data Transmission with Convolutional Codes

Abstract:

The theory of error-correcting codes plays an important role for the digital transmission of data. In this context, convolutional codes are especially suitable if the information is transmitted sequentially and therefore, there is the need for sequential encoding and decoding. Moreover, convolutional codes find application when transmitting over an erasure channel, which can be used to model several communication channels, in particular the internet.

In this talk, we will introduce the basics of error-correcting codes in general and the basics of convolutional codes in particular. The error-correcting capability of a code is determined by its minimum distance. There exist two important notions of distance for convolutional codes, the free distance and the column distances. We will present upper bounds for these distances and provide criteria and constructions for convolutional codes that reach these upper bounds, i.e. possess in some sense optimal error-correcting properties.