

Middle East Technical University  
Institute of Applied Mathematics

# SEMINAR SERIES

ROOM S 209, 12TH JANUARY 2016, 15.40

## The mathematics of random network coding

**Wolfgang Willems**

University of Magdeburg, Germany

We give an introduction to the theory of network coding from the basics of data transmission in a network up to the modeling in mathematics. The relevant objects are *subspace codes* in a projective, in particular in a Grassmannian space. In the talk we prove lower and upper bounds and discuss some good codes. Codes which achieve the upper bound can be seen as *q-analogues of Steiner systems*. The existence of such systems is in the focus of many researchers. Up to now only one non-trivial example is known.