Subspace Codes and Orbit Codes

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December 12th, 2013

Abstract: Subspace codes have been introduced by Koetter and Kschischang in order to tackle coding problems in the area of random linear network coding. In this framework information is encoded in subspaces of a given ambient space over a finite field. A natural metric is introduced where two subspaces are 'close to each other' as soon as their dimension of intersection is large. This framework poses the challenge to come up with new codes with optimal or near optimal distance and to develop efficient decoding algorithms.

In a first part of the talk we will provide a survey. In a second part of the talk we report on progress constructing spread codes and orbit codes. In this Grassmannian approach the decoding problem of orbit codes can be interpreted as a problem in Schubert calculus over a finite field.