



# Oberseminar zur Algebra und Algebraischen Kombinatorik

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## "Groups and Codes"

In this talk we will explore group and representation theoretical methods in coding theory. The absolute majority of "good" codes have nontrivial automorphism groups. Many of such codes can be considered as so-called group codes, that is, as ideals in the group algebra  $KG$  for some subgroup  $G$  of the automorphism group. This can provide an interesting point of view on the codes and help better understand their structure. Groups turn out to be particularly useful when studying self-dual codes. The strongest motivation comes from extremal codes, i.e. self-dual codes that have largest possible minimum distance. Such codes are only known for relatively small lengths, and to construct new codes one basically requires to make assumptions about the automorphism group. Using a representation theoretical approach we are able to classify extremal codes with 2-transitive automorphism groups. This suggests that new extremal codes, should they exist, will have little structure.

**Montag, 28.01.2013**  
**ab 14:15 Uhr, Raum a410**  
Hauptgebäude der Leibniz Universität Hannover  
Alle Interessierten sind herzlich eingeladen.

gez. Prof. Dr. C. Bessenrodt

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