



**UCD School of
Mathematics and Statistics**

University College Dublin
Belfield, Dublin 4, Ireland

Tel +353 1 716 2580
Fax +353 1 716 1196

**Scoil na
Matamaitice agus na Staitisticí UCD**

An Coláiste Ollscoile, Baile Átha Cliath
Belfield, Baile Átha Cliath 4, Éire

Email seminars@maths.ucd.ie
Web maths.ucd.ie/seminars

Algebra and Number Theory Seminar

Michael Kiermaier (Univ. of Bayreuth)

will speak on

New 2-arcs in projective Hjelmslev planes

Mon 19th October 2009 at 4:00PM

Location: Mathematical Sciences Seminar Room

There is a close connection between linear codes over a ring R and arcs in the projective geometries over R . The aim is to use the geometric point of view for the construction of good codes.

We look at the case that R is a chain ring of composition length 2. In this case, the geometries are called Hjelmslev geometries. The question for the maximum size of a 2-arc in a projective Hjelmslev plane over R is only answered partially: If R is a Galois ring of even characteristic, there exists an hyperoval. Its Gray image is a nonlinear code with very good parameters.

For non-Galois chain rings R , a new construction of large 2-arcs is given. If the characteristic of R is odd, the size meets the known upper bound, thus solving the maximal 2-arc problem for this instance. Furthermore, the parameters of the Gray image are investigated.

This talk is part of the **Algebra and Number Theory** series. For more, see

<https://maths.ucd.ie/seminars>