K-Theory, Quadratic Forms and Number Theory Seminar

Professor Ulf Rehmann (Universitaet Bielefeld)

will speak on

On the anisotropic splitting of division algebras

Thu 19th April 2012 at 4:00PM

Location: Mathematical Sciences Seminar Room (Ag 1.01)

To understand division algebras, a classical method is to simplify their structure by extending their base field, e.g., algebras can be "split", that is, made isomorphic to a full matrix ring over a suitable extension.

It is more interesting to find field extensions for which a given division algebra stays "anisotropic", i.e., it remains a division algebra over that extension, but of possibly simpler structure.

There are two interesting recent results:

1. A theorem of Hasse-Brauer-Noether states that every central simple algebra over a number field is cyclic. This does not hold for arbitrary fields. However, we have the following result: For any given field F there exists a regular field extension E/F such that i) any central simple E-algebra is cyclic, ii) for any central simple F-algebra, index and exponent over E (after field extension) are the same as over F, iii) the restriction homomorphism res Br(F) –¿ Br(E) is injective.

2. For given "disjoint" algebras $A_1, ... A_n and any set of "admissible" values for indices and exponents for every A_i one can canc$

This will be discussed in the talk. (Results based on joint work with S. Tikhonov and V. Yanchevskii.)

This talk is part of the **K–Theory, Quadratic Forms and Number Theory** series. For more, see
`https://maths.ucd.ie/seminars`