Fifth NRW Topology Meeting – Bielefeld (Germany)

Friday, April 28, 2006
11.00 – 11.45, Hörsaal 11

Andrew Ranicki (Edinburgh): **"The geometric Hopf invariant"**

The talk will describe a joint project with Michael Crabb (Aberdeen). The geometric Hopf invariant of a stable map $F : \Sigma^k X \to \Sigma^k Y$ is a stable map $h(F) : X \to (S^{k-1})^+ \wedge_{Z_2} (Y \wedge Y)$. The homotopy class of $h(F)$ is the primary obstruction to F being homotopic to the k-fold suspension $\Sigma^k F_0$ of a map $F_0 : X \to Y$. The geometric Hopf invariant $h(F)$ of the Umkehr map F of an immersion $f : Y \to X$ factors through the double point set of f, so that the homotopy class of $h(F)$ is the primary homotopy theoretic obstruction to f being regular homotopic to an embedding. The π_1-equivariant geometric Hopf invariant applies to the Wall non-simply-connected surgery obstruction theory.