Eleventh NRW Topology Meeting – Bielefeld (Germany)

Friday, May 08, 2009

17.00, Hörsaal 3

Aravind Asok: (Los Angeles) **"Rational connectivity and A^1-connectivity"**

A^1-homotopy theory, developed by Morel and Voevodsky, is a theory designed to import ideas from homotopy theory for use in algebraic geometry. Perhaps the most visible success of this theory to date has been the proof of some old conjectures of Milnor. I will explain an application of A^1-homotopy theory to a classical (i.e., 19th century) algebro-geometric question: how can one construct and/or distinguish varieties that are rational from those that are merely "close" to being rational?

First, using the (solution to the) Milnor conjectures, and then, time permitting, using some more "geometric" ideas from A^1-homotopy theory, I will explain how one can construct some relatively explicit (smooth complex) algebraic varieties that are "very close" to being rational yet not rational. The examples are quite elementary and concrete: they arise as appropriate families of complex quadric hypersurfaces, and even the techniques stem from elementary ideas, which we will explain. (Based on joint work with F. Morel)