NITheP cordially invites you to a seminar by:

**Professor John Hey**

*University of KwaZulu-Natal and University of Calgary*

Date: Friday, 5th September 2014

Time: 12h20 – 13h20

Venue: NITheP Seminar Room, H-Block, 3rd Floor

**TITLE: On Constructing a Neutron Star from Neutrons**

**ABSTRACT:** From the discussion of practical examples, we return to the question provoked by the recent article in *Physics Today*, which might arise in the mind of any ‘lay physicist’ (e.g. the speaker), who is not an expert cosmologist: whether the necessary tools are available not only

(i) to ‘construct’ a neutron star from well-established principles, but also

(ii) to predict its physical limitations,

without the need to invoke a novel and complex cosmology. We shall approach this in terms of two ‘back-of-the-envelope’ estimates, the first without and the second with inclusion of General Relativity, each of which considers: a highly degenerate fermion system compressed by gravitational ‘self-energy’ opposed by stellar rotation. Of particular significance appears to be the fact that the neutron is a composite and not a ‘structureless point’ particle, as is the electron in the theory of the white dwarf star. The presentation will remain elementary throughout, as befits a speaker’s stepping outside the confines of his field of research.

Tea, coffee and biscuits will be served at 12h00