NITheP & Quantum Research Group cordially invites you to a seminar by:

Professor Jonathan Blackledge

DVC Research, University of KwaZulu-Natal

Date: Wednesday, 15th October 2014

Time: 14h00 – 15h00

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

TITLE: Scattering and Inverse Scattering Problems

ABSTRACT:

Understanding the properties associated with the propagation and scattering of waves is a fundamental problem in physics. The mathematical models developed to advance this understanding have common themes in quantum mechanics, acoustics, and electromagnetism, for example. One of these themes (arguably one of the most important of all) is the application of the Green's function and this seminar begins with an introduction to the role that the Green's function plays in scattering theory. An overview of different approaches to solving the scattering and inverse scattering problem is then given and it is shown how the fundamental models used in physical optics and other areas of imaging science, for example, are based on the 'weak scattering' condition - the Born approximation. The seminar then addresses some current methods of solving the problem(s) under the 'strong scattering condition'. Finally the connectivity between the use of statistical physics and statistical models for scattering phenomena is briefly discussed.

Tea, coffee and biscuits will be served after the talk