Applied and Computational Mathematics Seminar

Title: Scattering, Absorption and Emission by Black Holes

Speaker: Sam Dolan (Cambridge)

Date: Fri 8th December 2006 at 2:00PM

Location: Mathematical Sciences Seminar Room

Abstract: In this talk I will present some solutions to linear wave equations on the Schwarzschild and Kerr black hole backgrounds, paying particular attention to the Dirac equation. First, I will review a simple "model problem": how does an incident plane wave interact with a isolated Schwarzschild black hole? Many authors have shown that interesting diffraction effects arise if the wavelength is comparable to the event horizon size. Next, I will discuss the rotating (Kerr) case, and examine the effect of spin-rotation coupling. The final part of the talk is concernced with the spectrum of Hawking emission from black holes. Recent theories with Large Extra Dimensions raise the intriguing possibility that black holes may be created by future particle accelerators. The accurate modelling of the decay of higher-dimensional black holes is therefore of timely interest to the particle physics community.

mailto:marc.casals@ucd.ie