

PHD IN PHYSICS: ON THE INTERFACE BETWEEN MULTIBOSON INTERFERENCE AND CORRELATIONS AND GRAVITY

Tue, 2018-03-20 15:20 - [Vincenzo Tamma](#) [1] **At:** Physics Division and Institute of Cosmology and Gravitation, University of Portsmouth
Deadline: 7 May, 2018

Location

Physics Division and Institute of Cosmology and Gravitation, University of Portsmouth Portsmouth United Kingdom
50° 49' 11.1648" N, 1° 5' 16.7172" W
See map: [Google Maps](#) [2]

We are looking for talented and ambitious European students who wish to pursue a Ph.D. in Physics at the interface between Quantum Optics and General Relativity (Start date: 1 October 2018 or 1 February 2019).

This project aims to extend the theory and application of atomic and photonic multiboson quantum interferometers in the presence of gravity as part of an interdisciplinary effort at the interface between quantum optics, quantum metrology and general relativity. The aims of the project are to enable novel high-precision measurements of gravitational fields and also to test, at the fundamental level, the influence of gravity on quantum phenomena, such as multiboson interference and entanglement, and the effects of quantum superposition within the gravitational context. Such novel measurement techniques may include quantum tests of the weak equivalence principle, noise-free detection of gravitational waves and fundamental tests of the interplay between multiboson correlations and time dilations in curved space time.

This project will be undertaken in the quantum optics and quantum information group led by Dr. Vincenzo Tamma at the Physics division at the University of Portsmouth and at the Institute of Cosmology and Gravitation in collaboration with Dr. Chris Dewdney and with Dr. Andrew Lundgren. It will be part of a larger research programme aimed at developing an entirely novel versatile platform based on multiphoton interferometry for quantum technologies for high-precision sensing. The successful PhD student will be part of an interdisciplinary research team within an international research environment at the interface between quantum optics, quantum metrology and general relativity. The student will also interact with leading international experimentalists to develop the experimental realisation of the theoretical results foreseen in the project.

Further information about the project and instructions for applications can be found here:

<http://www.port.ac.uk/postgraduate-research/mathematics-and-physics/funded-phd-opportunities/on-the-interface-between-multiboson-interference-and-correlations-and-gravity.html>

For enquiries about this project, please write to [vincenzo \[dot\] tamma \[at\] port \[dot\] ac \[dot\] uk](mailto:vincenzo.tamma@port.ac.uk)

Start date: 1 October 2018 or 1 February 2019

Application deadline: 7 May 2018

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