



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA

COLLOQUIUM
dipartimento **FIM**

Dipartimento di Scienze Fisiche,
Informatiche e Matematiche

New approaches to constrained path integrals with applications to the Casimir effect and Monte Carlo simulations

29 November 2022, 14:00 - 15:00

Room M1.3, Math Building (MO18)

Speaker

James P. Edwards

Faculty of Science and Engineering,
University of Plymouth, UK

Abstract

Path integrals, representing a sum over trajectories, appear in various areas of physics, including studies of Brownian motion in statistical mechanics and particle propagation in quantum theory. I will present recent work on two types of constrained path integrals: first with a restriction on the value of a given line integral along trajectories and secondly restricting trajectories to pass through chosen points. The complete path integral can be reconstructed from either, offering a novel way of studying both analytical and numerical aspects of path integration. This will be illustrated by applications to the Casimir effect and to Monte Carlo simulations of the path integral with a finite number of discretised paths.