

Master-2 internship proposal

**Lab: Centre de Physique Theorique (CPT), UMR 7332, Aix-Marseille
Universite - Luminy**

Research team: E7: " Systèmes dynamiques: théorie et applications"

Supervisor: Michel VITTOT

Tel: 04 91 26 95 24

e-mail: vittot@cpt.univ-mrs.fr

Level (M1, M2 or both): M2

Group Size: This is part 1 of a group of 3 separated subjects (somewhat related), for 1 student.

Project title: A Lie-Jordan Framework for Classical and Quantum Mechanics.

Abstract:

The Lie-Jordan Algebraic structure is a non-associative generalization of the Poisson structure. It is well adapted to describe the Classical or Quantum Hamiltonian Dynamics (via its Lie structure), as well as the associated "States" (via its Jordan structure), giving rise to an "Heisenberg Uncertainty Principle".

This Master2 project consists in a short introduction to this framework. And it can eventually be continued into a PhD thesis.

References:

Doering & Isham: "A Topos Foundation for Theories of Physics: I. Formal Languages for Physics", ArXiv: quant-ph/0703060
