

**Submittee:** Florin Diacu

**Date Submitted:** 2013-08-27 08:57

**Title:** CEMAD-2013

**Event Type:** Conference-Workshop

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**Location:**

University of Victoria, Canada

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**Dates:**

July 29 to August 2, 2013

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**Topic:**

Celestial, molecular, and atomic dynamics

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**Methodology:**

Lectures

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**Objectives Achieved:**

We succeeded to find new connections between the motion of particles in celestial, molecular, and atomic dynamical systems by bringing together top experts in these fields.

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**Scientific Highlights:**

In the various talks and discussions that took place, the following ideas were circulated: -- connecting the Wannier ridge, which is the single central configuration in helium, with the latest developments in the theory of central configurations -- finding the connection between atoms with more than three electrons and various central configurations that occur for the Coulomb potential -- generalizing the eZe configurations of the isosceles problem -- using the recent achievements in KAM theory to put into the evidence some new periodic orbits in atomic and molecular systems -- using the formalism of geometric mechanics to explore the symplectic structure of the equations that describe molecular dynamics -- exploring the use of symbolic dynamics and borrow from each other's experience, for the benefits of all groups involved -- using new ways to apply McGehee coordinates in the study of motion near total collisions -- finding and investigating new symmetries, both in flat and curved space -- regarding the latest quantum experiments from various mathematical points

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**Organizers:**

Buchleitner, Andreas, Department of Physics, University of Freiburg, Germany// Diacu, Florin, Department of Mathematics and Statistics, University of Victoria, Canada// Tanner, Gregor, Department of Mathematics, University of Nottingham, UK

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**Speakers:**

-- see attached PDF file

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**Links:**

<http://www.pims.math.ca/scientific-event/130729-cmad2>

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**Comments / Miscellaneous:**

This workshop was a great success and there was unanimous agreement to continue organizing meetings in this direction.

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**File Uploads:**

Additional Upload 1: [http://www.pims.math.ca/files/final\\_report/Cemad-Abstracts-Jul19.pdf](http://www.pims.math.ca/files/final_report/Cemad-Abstracts-Jul19.pdf)

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