

Centre de recherches mathématiques  
Université de Montréal

Atelier «Mouvements planétaires, dynamique des satellites et orbites des  
engins spatiaux»  
Du 22 au 26 juillet 2013

*Workshop on Planetary Motions, Satellite Dynamics, and Spaceship Orbits*  
*July 22-26, 2013*

## **HORAIRE / *PROGRAM***

Conférences : salle 1140 (Pavillon André-Aisenstadt)  
Pauses-café : salle 1221 (Pavillon André-Aisenstadt)

*Lectures: Room 1140 (Pavillon André-Aisenstadt)*  
*Coffee Breaks: Room 1221 (Pavillon André-Aisenstadt)*

## Le lundi 22 juillet 2013 / *Monday, July 22, 2013*

**09:00 - 09:40** Inscription et café-croissants (1221) / *Registration and Coffee & Croissants (1221)*

**09:30 - 09:45** Mots de bienvenue / *Welcoming addresses*

**09:45 - 10:25** **Stanley F. Dermott** (University of Florida)  
*"Dynamical erosion of the asteroid belt by high-order Martian resonances"*

**10:30 - 11:00** Pause-café / *Coffee break*  
 (Salle / *Room* 1221)

**11:00 - 11:40** **Edward Belbruno** (Princeton University)  
*"Low energy transfers, weak stability boundaries and applications"*

**11:45 - 12:25** **Christos Efthymiopoulos** (Research Center for Astronomy)  
*"Hyperbolic normal forms, analytic computation of invariant manifolds and applications in astrodynamics"*

**12:30 - 14:30** Pause-déjeuner / *Lunch break*

**14:30 - 15:10** **Alessandra Celletti** (Universita' di Roma "Tor Vergata" )  
*"On the stability of some dissipative systems with applications to Celestial Mechanics"*

**15:15 - 15:55** **Renato Calleja** (Georgia Tech)  
*"Periodic and quasi-periodic orbits in celestial mechanics models with dissipation"*

**16:00 - 16:30** Pause-café / *Coffee break*  
 (Salle / *Room* 1221)

**16:30 - 17:10** **Richard Moeckel** (University of Minnesota)  
*"Blow-up and regularization of collisions in the planar four-body problem"*

## Le mardi 23 juillet 2013 / *Tuesday, July 23, 2013*

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- 08:30 - 09:00** Café croissants (1221) / *Coffee & Croissants (1221)*
- 09:00 - 09:40** **Lei Zhao** (IMCCE - Observatoire de Paris)  
*"Almost-collision orbits in the spatial three-body problem"*
- 09:45 - 10:25** **Giovanni Federico Gronchi** (Universita' di Pisa)  
*"Intersection of curves and orbit determination"*
- 10:30 - 11:00** Pause-café / *Coffee break*  
 (Salle / Room 1221)
- 11:00 - 11:40** **Paolo Teofilatto** (Sapienza Università di Roma)  
*"Global analysis of low energy transfers in the restricted three body problem"*
- 11:45 - 12:25** **Eusebius Doedel** (Concordia University)  
*"Boundary-value problem formulations for computing invariant manifolds and connecting orbits in the circular restricted three body problem"*
- 12:30 - 14:30** Pause-déjeuner / *Lunch break*
- 14:30 - 15:10** **Sergey Bolotin** (University of Wisconsin-Madison)  
*"Nearly collision trajectories of the 3 body problem"*
- 15:15 - 15:55** **Frédéric Pierret** (Observatoire de Paris)  
*"Stochastic perturbation of the two-body problem"*
- 16:00 - 16:30** Pause-café / *Coffee break*  
 (Salle / Room 1221)
- 16:30 - 17:10** **Kenneth R. Meyer** (University of Cincinnati)  
*"Stability of a Hamiltonian system in a limiting case"*
- 17:30 - 19:00** Cocktail (Salon Maurice-l'Abbé (6245)) / *Reception (Salon Maurice-l'Abbé (6245))*

## Le mercredi 24 juillet 2013 / *Wednesday, July 24, 2013*

**08:30 - 09:00** Café croissants (1221) / *Coffee & Croissants (1221)*

**09:00 - 09:40** **Gabriella Pinzari** (Università Roma Tre)

*“The aspect of the planetary normal form: stable and unstable motions”*

**09:45 - 10:25** **Marco Sansottera** (University of Namur)

*“Non linear oscillations and long-term evolution:  
application to planetary systems and spin-orbit problem”*

**10:30 - 11:00** Pause-café / *Coffee break*  
(Salle / Room 1221)

**11:00 - 11:40** **Philippe Robutel** (IMCCE - Observatoire de Paris)

*“On the co-orbital motion of two planets in quasi-circular orbits”*

**11:45 - 12:25** **Jacques Laskar** (IMCCE, Observatoire de Paris)

*“Secular resonances in the Solar System and paleoclimate sedimentary records”*

**12:30 - 14:30** Pause-déjeuner / *Lunch break*

**14:30 - 15:10** **Vladislav Sidorenko** (Russian Academy of Sciences)

*“Quasi-satellite regime of motion of small celestial bodies: formation and destruction”*

**15:15 - 15:55** **Christoph Lhotka** (Università di Roma Tor Vergata)

*“On the dynamics in the Lagrange problem subject to non-gravitational forces”*

**16:00 - 16:30** Café / *Coffee*

(Salle / Room 1221)

## Le jeudi 25 juillet 2013 / *Thursday, July 25, 2013*

**08:30 - 09:00** Café croissants (1221) / *Coffee & Croissants (1221)*

**09:00 - 09:40** **Daniel Scheeres** (University of Colorado)

*“Minimum energy configurations in the  $N$ -body problem and the celestial mechanics of granular systems”*

**09:45 - 10:25** **Anne Lemaitre** (Université de Namur)

*“A symplectic integrator for geosynchronous space debris”*

**10:30 - 11:00** Pause-café / *Coffee break*  
(Salle / Room 1221)

**11:00 - 11:40** **Giuseppe Pucacco** (Università di Roma "Tor Vergata")

*“Geometric analysis of bifurcations in 1:1 resonance”*

**11:45 - 12:25** **Massimiliano Guzzo** (Università degli Studi di Padova )

*“Localization of stable-unstable manifolds with Fast Lyapunov Indicators and applications to the three body problem”*

**12:30 - 14:30** Pause-déjeuner / *Lunch break*

**14:30 - 15:10** **Livia Corsi** (Università di Napoli "Federico II")

*“Degenerate lower-dimensional invariant tori for non-convex Hamiltonian systems”*

**15:15 - 15:55** **Christiane Rousseau** (Université de Montréal)

*“Mathematics of Planet Earth”*

**16:00 - 16:30** Pause-café / *Coffee break*  
(Salle / Room 1221)

### - *Chaire André-Aisesntadt Chair*

**16:30 - 17:30** **Simon A. Levin** (Princeton University)

*“The challenge of sustainability and the promise of mathematics”*

**17:30 - 19:00** Cocktail (Salon Maurice-l'Abbé (6245)) / *Reception (Salon Maurice-l'Abbé (6245))*

## Le vendredi 26 juillet 2013 / *Friday, July 26, 2013*

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**08:30 - 09:00** Café croissants (1221) / *Coffee & Croissants (1221)*

**09:00 - 09:40** **Marian Gidea** (Northeastern Illinois University)  
*“Three models for Arnold diffusion in the three body problem”*

**09:45 - 10:25** **Massimiliano Vasile** (University of Strathclyde)  
*“Methods and techniques for asteroid deflection”*

**10:30 - 11:00** Pause-café / *Coffee break*  
(Salle / *Room* 1221)

**11:00 - 11:40** **Martin J. Duncan** (Queen’s University)  
*“Simulations of giant planet core formation”*

**11:45 - 12:25** **Daniel Offin** (Queen’s University)  
*“Minimizing orbits in the parallelogram 4 body problem”*

**12:30** Fin de l’atelier / *Closure of the workshop*