Centre de recherches mathématiques
Université de Montréal

Atelier "Modèles et méthodes mathématiques en filamentation laser"
Du 10 au 14 mars 2014

Workshop on Mathematical Methods and Models in Laser Filamentation
March 10-14, 2014

HORAIRE / *PROGRAM*

Conférences : salle 6214 (Pavillon André-Aisenstadt)
Pauses-café : salon Maurice-L'Abbé (salle 6245, Pavillon André-Aisenstadt)

Lectures: *Room 6214 (Pavillon André-Aisenstadt)*
Coffee Breaks: *Salon Maurice-L'Abbé (Room 6245, Pavillon André-Aisenstadt)*

Le lundi 10 mars 2014 / *Monday, March 10, 2014*

08:30 - 09:45 Inscription (salle 5345) et café-croissants (salle 6245)
Registration (Room 5345) and Coffee & Croissants (Room 6245)

09:45 - 10:00 Introduction / *Opening remarks*

10:00 - 10:45 **Catherine Sulem** (University of Toronto)
"Lower bound for the rate of blow-up of singular solutions for the three dimensional Zakharov system"

10:45 - 11:15 Pause-café / *Coffee break*
(Salle / *Room* 6245)

11:15 - 12:00 **Jerome V. Moloney** (University of Arizona)
"Singular structures and many-body effects in extreme nonlinear optics"

12:00 - 14:00 Pause-déjeuner / *Lunch break*

14:00 - 14:45 **Alexander L. Gaeta** (Cornell University)
"Self-focusing and Filamentation in Optical Waveguides"

14:45 - 15:30 **Arnaud Couairon** (École Polytechnique)
"Filamentation, third harmonic and supercontinuum generation, conical emission in the anomalous dispersion region of transparent solids"

15:30 - 16:00 Pause-café / *Coffee break*
(Salle / *Room* 6245)

16:00 - 16:45 **Thomas Brabec** (University of Ottawa)
"Bridging the microscopic and macroscopic scales of light matter interaction"

Le mardi 11 mars 2014 / *Tuesday, March 11, 2014*

08:30 - 09:00 Café croissants / *Coffee & Croissants*
(Salle / *Room* 6245)

09:00 - 09:45 **Paul B. Corkum** (University of Ottawa & NRC)
"Ionization, currents and lasing in filaments"

09:45 - 10:30 **Dmitri Pelinovsky** (McMaster University)
"Broad band solitons in a periodic and nonlinear Maxwell system"

10:30 - 11:00 Pause-café / *Coffee break*
(Salle / *Room* 6245)

11:00 - 11:45 **Jae-Hun Jung** (University at Buffalo, SUNY)
"Spectral methods for solving nonlinear Schrödinger equations with singular defect terms"

11:45 - 14:00 Pause-déjeuner / *Lunch break*

14:00 - 14:45 **Jean-Claude Diels** (University of New Mexico)
"Experimental characterization of single filaments; providing realistic parameters for numerical simulations"

14:45 - 15:30 **Daniel Houde** (Université de Sherbrooke)
"Filamentation of femtosecond laser pulses in solutions of biological interest : low density plasma has a new pattern of ionizing radiation for radiobiology and radiotherapy"

15:30 - 16:00 Pause-café / *Coffee break*
(Salle / *Room* 6245)

16:00 - 16:45 **Jean-Claude Kieffer** (INRS Énergie, Matériaux et Télécom.)
"Overview of the INRS program on filamentation and perspectives with high peak power laser"

16:45 - 17:00 **Szczepan Chelkowski** (Université de Sherbrooke)
"The photon momentum sharing in photoionization"

Le mercredi 12 mars 2014 / *Wednesday, March 12, 2014*

08:30 - 09:00 Café croissants / *Coffee & Croissants*
(Salle / *Room* 6245)

09:00 - 09:45 **Stefan Skupin** (Université Bordeaux 1)
"High-intensity laser matter interaction"

09:45 - 10:30 **Luc Bergé** (Commissariat à l'Énergie Atomique)
"THz emissions induced by laser-gas interaction"

10:30 - 11:00 Pause-café / *Coffee break*
(Salle / *Room* 6245)

11:00 - 11:45 **See Leang Chin** (Université Laval)
"Filament induced precipitation in a sub-saturated zone in a cloud chamber"

11:45 - 12:00 **Christiane Rousseau** (Université de Montréal)
"Mathematics of Planet Earth"

12:00 - 14:00 Déjeuner / *Lunch*
(Salle / *Room* 6245)

14:00 - 16:00 **Séance d'affiches / *Poster Session***
(Salle / *Room* 6245)

Le jeudi 13 mars 2014 / *Thursday, March 13, 2014*

08:30 - 09:00 Café croissants / *Coffee & Croissants*
(Salle / *Room* 6245)

09:00 - 09:45 **Walter Craig** (McMaster University)
"Near parallel vortex filament interactions"

09:45 - 10:30 **David Lannes** (École Normale Supérieure)
"Various NLS models for laser filamentations"

10:30 - 11:00 Pause-café / *Coffee break*
(Salle / *Room* 6245)

11:00 - 11:45 **Alan C. Newell** (The University of Arizona)
"The canonical equation for ultra short pulse propagation"

11:45 - 14:00 Pause-déjeuner / *Lunch break*

14:00 - 14:45 **Alejandro B. Aceves** (Southern Methodist University)
"Modeling and simulations of multi-colored filaments"

14:45 - 15:30 **Brigitte Bidégaray-Fesquet** (Laboratoire Jean Kuntzmann (LJK))
"Quantum models for laser-matter interaction"

15:30 - 16:00 Pause-café / *Coffee break*
(Salle / *Room* 6245)

16:00 - 16:45 **Miroslav Kolesik** (The University of Arizona)
"Non-perturbative light-matter interactions in extreme nonlinear optics"

16:45 - 17:00 **Paris Panagiotopoulos** (The University of Arizona)
"Nonlinear Airy and Airy-like wavepackets"

Le vendredi 14 mars 2014 / *Friday, March 14, 2014*

08:30 - 09:00 Café croissants / *Coffee & Croissants*
(Salle / *Room* 6245)

09:00 - 09:45 **Peng Liu** (Shanghai Inst. of Optics & Fine Mechanics)
"Elliptically polarized THz radiation from laser plasma driven by few-cycle laser pulses"

09:45 - 10:30 **Olga Kosareva** (Lomonosov Moscow State University)
"Divergent and confined low-frequency radiation from femtosecond filaments in gases"

10:30 - 11:00 Pause-café / *Coffee break*
(Salle / *Room* 6245)

11:00 - 11:45 **Emmanuel Lorin de la Grandmaison** (Carleton University)
"Domain decomposition method derived from high order absorbing boundary conditions for the Schroedinger equation"

11:45 - 12:15 **Ladan Arissian** (University of New Mexico)
"Anisotropy of pulse and plasma dynamics in filament propagation"

12:15 - 12:30 **Conclusion / *Final words***