Emerging Applications of the Nonlinear Schrödinger Equations

Monday February 3, 2003

12:00	*Day 1: Laser propagation in bulk medium*
8:30	*Session Chair: Shi Jin*
8:30–9:00	*Check-In/Light Breakfast (Hosted by IPAM)*
9:00–10:00	**Alexander Gaeta** (Cornell University) *Spatial and Temporal Dynamics of Nonlinear Wave Collapse*
10:00–11:00	**Alfred Vogel** (Medizinisches Laserzentrum Lübeck, Germany) *Numerical simulations of optical breakdown for cellular laser surgery at nanosecond to femtosecond time scales*
11:00–11:30	*Break*
11:30–12:30	**Pierre-Louis Sulem** (Obervatoire de la Cote d'Azur) *Wave collapse in dispersive magnetohydrodynamics: direct simulations and asymptotic modeling*
12:30–2:00	*Lunch (on your own)*
2:00	*Session Chair: Pierre-Louis Sulem*
2:00–3:00	**Xiao-Ping Wang** (Hong Kong University of Science and Technology) *An adaptive grid method for singular problems and applications*
3:00–3:30	*Break*
3:30–4:30	**Boaz Ilan** (University of Colorado) *Self-focusing and multiple filamentation of circularly polarized beams*
4:30–5:30	**Miroslav Kolesik** (University of Arizona) *Unidirectional optical pulse propagation equations - from Maxwell to Nonlinear Schrödinger equation*
5:30–7:00	*Wine/Cheese Reception (Hosted by IPAM)*

Tuesday February 4, 2003

12:00 *Day 2: 2D NLS theory*

9:00 *Session Chair: Catheleen Sulem*

9:00–10:00 **Frank Merle** (Universite de Cergy, France)
qualitative description of blow-up for critical NLS

10:00–11:00 **Gadi Fibich** (Tel-Aviv University, Israel)
Nonlinear Schrödinger equations with fourth-order dispersion

11:00–11:30 *Break*

11:30–12:30 **Hayato Nawa** (Nagoya University)

12:30–2:00 *Lunch (on your own)*

2:00 *Session Chair: Gadi Fibich*

2:00–3:00 **Semyon Tsynkov** (North Carolina State University)
Backscattering and Nonparaxiality Arrest Collapse of Damped Nonlinear Waves

3:00–3:30 *Break*

3:30–4:30 **Yvan Martel** (Ecole Polytechnique, France)
Blow up phenomenon in the energy space for the critical generalized KdV equation

4:30–5:30 **Jared Bronski** (University of Illinois at Urbana-Champaign)
Instability and Pattern formation in a nonlocal NLS

Wednesday February 5, 2003

12:00 *Day 3: Solitons+communications*

9:00 *Session Chair: Michael Weinstein*

9:00–10:00 **Ziad Musslimani** (University of Colorado)
The vector nonlinear Schrödinger equations

10:00–11:00 **George Stegeman** (University of Central Florida)
Optical Experiments with the Discrete Nonlinear Schrödinger Equation

11:00–11:30 *Break*

(Wednesday schedule continued on next page)

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11:30–12:30 **Rick Trebino** (Georgia Institute of Technology)
Measurements of Ultrafast Continuum Generation in Microstructure Fiber

12:30–2:00 *Lunch (on your own)*

2:00 *Session Chair: George Papanicolaou*

2:00–3:00 **Michael Weinstein** (Bell Laboratories)
Selection of the ground state for nonlinear Schrödinger Equations

3:00–3:30 *Break*

3:30–4:30 **Mark Ablowitz** (University of Colorado)
Discrete and continuous nonlinear Schrödinger systems

4:30–5:30 **Peter Markowich** (University of Vienna and Radon Institute, Austrian Academy of Science, Linz)
PDE Models for Bose-Einstein Condensation

Thursday February 6, 2003

12:00 *Day 4: Solitons+communications (continued)*

9:00 *Session Chair: Mark Ablowitz*

9:00–10:00 **William Kath** (Northwestern University)
Simulating rare events in optical transmission systems

10:00–11:00 **Alejandro Aceves** (University of New Mexico)
Pulse dynamics in nonlinear photonic crystal fibers and periodic structures

11:00–11:30 *Break*

11:30–12:30 **Ildar Gabitov** (University of Arizona)
Intra-Channel Four Wave Mixing in High Speed Optical Fiber Communications

12:30–2:00 *Lunch (on your own)*

2:00 *Session Chair: Irene Gamba*

2:00–3:00 **Jean-Claude Diels** (University of New Mexico)
Spatial-temporal solitons in air — experimental puzzles, and (too) simple models

3:00–3:30 *Break*

3:30–4:30 **Christopher Jones** (Brown University)
Perturbations of solitary waves in dispersion-managed systems

4:30–5:30 **Li-Tien Cheng** (University of California at San Diego)
The Level Set Method Applied to the Schrödinger Equation

5:30–7:00 *Dinner (Hosted by IPAM)*

Friday February 7, 2003

12:00	*Day 5: BEC*
9:00	*Session Chair: Peter Markowich*
9:00–10:00	**Amandine Aftalion** (Universite Pierre et Marie Curie, Paris) *Mathematical model for Bose Einstein condensates*
10:00–11:00	**Qiang Du** (Pennsylvania State University) *Quantized vortices in Bose-Einstein condensate*
11:00–11:30	*Break*
11:30–12:30	**Alexander Fetter** (Stanford University) *Stability and Dynamics of Vortices in a Trapped Bose-Einstein Condensate*
12:30–2:00	*Lunch (on your own)*
2:00	*Session Chair: Alexander Fetter*
2:00–3:00	**Irene Gamba** (University of Texas, Austin) *Quantum Trajectories and the Wigner equation*
3:00–3:30	*Break*
3:30–4:30	**Catherine Sulem** (University of Toronto) *On asymptotic stability of solitary waves for nonlinear Schrödinger equations*
4:30–5:30	**Alex Gottlieb** (Wolfgang Pauli Institute) *Self-consistent Schroedinger and Liouville-von Neumann equations for material particles*
5:30–12:00	*Conclusion*