

High-order actions and their applications in many-body, few-body, classical problems

to honor our friend and collaborator

Siu A. Chin

at the occasion of his 60th birthday

March 24-26 2009

**Technical University of Catalonia, North Campus
Barcelona**



PROGRAMME

Main room of the Barcelona School of Informatics
(Building B6, North Campus, UPC)

Tuesday 24 March 2009

- 9:00-9:15 *Opening remarks*
- Jordi Boronat (Technical University of Catalonia, Spain)
Eckhard Krotscheck (University of Linz, Austria)
- Chair: Raymond Bishop (University of Manchester, UK)
- 9:15-10:00 Siu A. Chin (Texas A&M University, USA)
*Multi-product expansion and high order algorithms for solving
physical evolution equations*
- 10:00-10:30 Gregory Astrakharchik (Technical University of Catalonia,
Spain)
Two-dimensional weakly interacting Bose gas: equation of state
- 10:30-11:00 *Coffee Break*
- 11:00-11:45 Robert Zillich (University of Linz, Austria)
*Dipolar quantum gases, exciplex formation in ^4He , and surface
condensate*
- 11:45-12:30 Artur Polls (University of Barcelona, Spain)
Correlated momentum distributions in nuclear systems
- 12:30-13:00 Vesa Apaja (University of Jyväskylä, Finland)
*Time Evolving Block Decimation: Applications to one dimensional
fermions*
- 13:00-15:00 LUNCH

Chair: Siu A. Chin (Texas A&M University, USA)

- 15:00-15:45 Fernando Casas (University Jaume I, Spain)
The Magnus expansion and its physical applications
- 15:45-16:30 Che-Ming Ko (Texas A&M University, USA)
Probing dense nuclear matter by heavy ion collisions
- 16:30-16:50 *Coffee Break*
- 16:50-17:35 Eduardo Hernández (Institut de Ciència de Materials de
Barcelona – CSIC, Spain)
*Computer simulations of the thermodynamics of materials: free
energies and phase diagrams*
- 17:35-18:20 Juergen Geiser (Humboldt-Universität zu Berlin, Germany)
*Solving the Schroedinger Equation with Magnus Integrator and
Suzuki's Method*

Wednesday 25 March 2009

Chair: Eckhard Krotscheck (University of Linz, Austria)

- 9:00-9:45 Mikko Saarela (University of Oulu, Finland)
*Two-component physics of charge carriers and the
superconductor-insulator transition in cuprates*
- 9:45-10:30 Ferran Mazzanti (Technical University of Catalonia, Spain)
Excitations in Strongly Interacting Bose Einstein Condensates
- 10:30-11:00 *Coffee Break*
- 11:00-11:45 Raymond Bishop (University of Manchester, UK)
*Journeys To and In Quantum Phase Space: Extended Spaces
and Their Uses*
- 11:45-12:30 Rafael Guardiola (University of Valencia, Spain)
Van-der-Waals clusters: solid or liquid ?

- 12:30-13:00 Yaroslav Lutsyshyn (Technical University of Catalonia, Spain)
Elastic transmission of atoms through helium films
- 13:00-15:00 LUNCH
- Chair: Artur Polls (University of Barcelona, Spain)
- 15:00-15:45 Eckhard Krotscheck (University of Linz, Austria)
Dynamic Many-Body Correlations
- 15:45-16:15 Stefan Janecek (University of Linz, Austria)
Solving Schrödinger equations in strong magnetic fields:High-order operator splitting methods.
- 16:15-16:45 *Coffee Break*
- 16:45-17:30 Harald Forbert (Ruhr-Universitaet Bochum, Germany)
On the applicability of Centroid and Ring Polymer Path Integral Molecular Dynamics for Vibrational Spectroscopy
- 17:30-18:15 Birgitta Whaley (University of California, Berkeley, USA)
Squeezing and superposing many-body states of Bose gases in confining potentials

Thursday 26 March 2009

Chair: Mikko Saarela (University of Oulu, Finland)

- 9:00-9:45 Joaquim Casulleras (Technical University of Catalonia, Spain)
High-order actions in zero-temperature quantum Monte Carlo
- 9:45-10:30 Sergio Blanes (Technical University of Valencia, Spain)
Splitting methods for explicitly time-dependent systems
- 10:30-11:00 *Coffee Break*

- 11:00-11:45 Jordi Boronat (Technical University of Catalonia, Spain)
Higher-order Chin actions in path integral Monte Carlo
- 11:45-12:30 Leandra Vranješ Markić (University of Split, Croatia)
Quantum Monte Carlo simulation of spin-polarized tritium
- 12:30-13:00 *Closing remarks*
- 13:00-15:00 SOCIAL LUNCH