

**2nd International Conference on
Numerical Modeling of Space Plasma Flows**

ASTRONUM2007

**Paris, France
June 10-15, 2007**

June 10, Sunday 2007

Hotel Concorde Montparnasse

18.30 - 21.30 : Registration, Conference Reception

June 11, Monday 2007

Session: Turbulence and Cosmic Ray Transport

Time	Speaker	Talk
08.00 – 08.40		Registration, Conference Reception
08.40 – 09.00	Edouard Audit Nikolai Pogorelov	Conference Presentation, Welcome Talk
09.00 – 09.40	Alexander Lazarian	Ultimate Test for Theory: Statistics of Turbulence from Observations
09.40 – 10.05	Gary Zank	The interaction of turbulence with shock waves
10.05 – 10.30	Allan Sacha Brun	The fascinating turbulence and Magnetism of the Sun and Stars
10.30 – 10.50	Morning Coffee Break	

Session: Turbulence and Cosmic Ray Transport

10.50 – 11.15	Turlough Downes	Implications of the Hall Effect for Turbulent Magnetic Clouds
11.15 – 11.40	Sébastien Galtier	Hall-MHD Turbulence in the Solar Wind
11.40 – 12.05	Edward Liverts	Convective vs. Absolute Instability of Rotating Ideal-Fluid Disks in the presence of External Magnetic Field
12.05 – 12.30	Yann Rasera	Cosmic rays and Anisotropic Transport in Clusters of galaxies
12.30 – 12.55	Dongsu Ryu	Turbulence and Magnetic Fields in the Large Scale Structure of the Universe
12.55 – 14.30	Lunch Break	

Session: Turbulence and Cosmic Ray Transport

14.30 – 14.55	Dastgeer Shaikh	Non-Kolmogorov-type Turbulence in the Local Interstellar Medium
14.55 – 15.20	Huirong Yan	Cosmic ray transport in MHD turbulence
15.20 – 15.45	Vladimir Florinski	Three-dimensional Transport of Cosmic Rays in the Heliosphere
15.45 – 16.15	Afternoon Coffee Break	
16.15 – 16.40	Ming Zhang	Stochastic Differential Approach to Cosmic ray Propagation and Acceleration
16.40 – 17.05	Gang Li	Solar Modulation of GCRs Using a Monte-Carlo Simulation
17.05 – 17.30	Dinshaw Balsara	Dust sedimentation in Protoplanetary Disks

Sessions end

June 12, Tuesday 2007

Session: Astrophysical Flows

Time	Speaker	Talk
09.00 – 09.25	Edouard Audit	Fragmentation in the Interstellar Medium
09.25 – 09.50	Jerome Novak	A Combined Spectral/Godunov Code for the Simulation of Gravitational Waves from Core Collapse
09.50 – 10.15	Maxim Barkov	Magnetic acceleration of relativistic AGN Jets
10.15 – 10.40	Frédéric Masset	Numerical Simulations of Protoplanet Nebula Tides with the Godunov Method
10.40 – 11.10 Morning Coffee Break		

Session: Astrophysical Flows

11.10 – 11.35	Matthias Gonzalez	Radiative Shocks and Jets with the ARWEN and HERACLES Codes
11.15 – 12.00	Giuseppe Lanzafame	Role of Physical Viscosity on Accretion Disk Dynamics in Close Binaries and AGN
12.00 – 12.25	George Jordan	Results of Large Scale 3D Simulations of the Gravitationally Confined Detonation Model of Type Ia Supernovae
12.25 – 12.50	Hyesung Kang	Cosmological Shock Waves in the Large Scale Structure of the Universe: Non-gravitational Effects
12.50 – 14.30 Lunch Break		

Session: Astrophysical Flows

14.30 – 14.55	Serguey Komissarov	Magnetar-driven supernova explosions
14.55 – 15.20	Thierry Foglizzo	The advective-acoustic instability in numerical simulations of astrophysical flows
15.20 – 15.45	Tahar Amari	Methods and Results for the Structure and Evolution of Solar Magnetic Fields
15.45 – 16.15 Afternoon Coffee Break		
16.15 – 16.40	Emmanuel Dormy	The origin of magnetic fields in planets and stars
16.40 – 17.05	Maha Ashour-Abdalla	The Structure and Dynamics of the Magnetotail Current Sheet
17.05 – 17.30	Chuxin Chen	Field Aligned currents in Io's plasma wake
Sessions end		

June 13, Wednesday 2007

Session: Data Handling and Visualization

Time	Speaker	Talk
09.00 – 09.40	David Porter	Parallel Volume Visualization of High-Resolution Flow Simulation Data
09.40 – 10.05	Daniel Pomarède	Interactive Visualization of Astrophysical Plasma Simulations with SDvision
10.05 – 10.30	Michael Papka	Collaborative Visualization of AMR Data
10.30 – 11.00	Morning Coffee Break	

Session: Data Handling and Visualization

11.00 – 11.40	Gunther Weber	Current State of the Art in Adaptive Mesh Refinement Visualization
11.40 – 12.20	JohnClyne Mark Rast	Analysis and Visualization of High Resolution Astrophysical Flows
12.20 – 12.45	Jean-Philippe Nominé	Parallel Software and Hardware for Capability Visualization of HPC Results
12.45 – 14.30	Lunch Break	

Session: Space Plasma Flows

14.30 – 15.10	Pekka Janhunen	MHD-hybrid-kinetic Simulations of solar Wind Interacting with Bodies: Magnetized and Unmagnetized Planets and Electric Sailing Spacecraft
15.10 – 15.35	Nikolai Pogorelov	MHD-neutral Model of the Outer Heliosphere
15.35 – 16.00	John Dorelli	TBD
16.00 – 16.30	Afternoon Coffee Break	
16.30 – 16.55	Melvyn Goldstein	Magnetohydrodynamic Simulations of the Solar Wind
16.55 – 17.20	Anshu Dubey	Challenges of Extreme Computing using the FLASH Code
Sessions end		
Conference Dinner 19.30 – 24.00		

June 14, Thursday 2007

Session: Numerical Methods

Time	Speaker	Talk
09.00 – 09.40	Gabor Toth	Parallel Explicit-implicit Time Stepping Scheme on Block-adaptive Grids
09.40 – 10.05	Jimmy Raeder	Small-Scale Physics from Large-Scale Simulations
10.05 – 10.30	Thomas Gardiner	Athena: Present, Past and Future
10.30 – 11.00	Morning Coffee Break	

Session: Numerical Methods

11.00 – 11.25	Paul Arminjon	Some Aspects of Central Finite Volume Methods for 3D MHD
11.25 – 11.50	Katharine Gurski	An HLLC-type Approximate Riemann Solver for Ideal Magnetohydrodynamics
11.50 – 12.15	Tomoyuki Hanawa	Care for the Carbuncle Instability based on the Characteristics of the MHD Equations
12.15 – 12.40	Shengtai Li	Divergence-Free Reconstruction for Adaptive Mesh Refinement
12.40 – 14.30	Lunch Break	

Session: Numerical Methods

14.30 – 14.55	Takahiro Miyoshi	A Robust and Efficient Riemann Solver for MHD
14.55 – 15.20	Kanya Kusano	Advanced Simulation Study on the Triggering Mechanism of Solar Flares and CMEs
15.20 – 15.45	Igor Kryukov	A New, Three-dimensional, Adaptive Mesh Refinement Code for Modeling Flows of Partially Ionized Plasma
15.45 – 16.15	Afternoon Coffee Break	
16.15 – 16.40	Wolfram Rosenbaum	A Second Order Finite Volume Scheme on Adaptive Staggered Grids in 3D
16.40 – 17.05	Igor Sokolov	Computational Hydrodynamics and Magnetohydrodynamics with Block Adaptive Grids
17.05 – 17.30	Romain Teyssier	RAMSES MHD and application to galaxy formation
Sessions end		

June 15, Friday 2007

Session: Space Plasma Flows

Time	Speaker	Talk
09.00 – 09.25	Horst Fichtner	MHD Modelling of CMEs
09.25 – 09.50	Dusan Odsrtcil	Numerical Simulations of solar Wind Disturbances by Coupled Models
09.50 – 10.15	Burlen Loring	Constrained Transport AMR-MHD
10.15 – 10.40	Stephen O’Sullivan	Numerical modeling of weakly ionized plasmas
10.40 – 11.10	Morning Coffee Break	

Session: Kinetic and Hybrid Simulations

11.10 – 11.35	Vladislav Izmodenov	Kinetic-continuum Models of the Heliospheric Boundaries
11.35 – 12.00	Riku Jarvinen	Unified Hybrid Simulation code for Planetary Plasma Interactions
12.00 – 12.25	Sergej Rjasanow	Stochastic Numerics for the Boltzmann Equation
12.25 – 12.50	Jörg Büchner	Vlasov Code Simulation of Astrophysical Plasmas
12.50 – 14.30	Lunch Break	

Session: Kinetic and Hybrid Simulations

14.30 – 14.55	Jacob Heerikhuisen	Modeling kinetic Neutral Atoms in the Solar-Wind/Interstellar-Medium Interaction Region
14.55 – 15.20	Masahiro Hoshino	Particle Acceleration by Radiation Pressure in Relativistic Shock waves: Wakefield Acceleration due to Ponderomotive Force
15.20 – 15.45	Sergey Borovikov	Modeling axially-symmetric heliosphere with an adaptive MHD-kinetic code.
15.45 – 16.15	Afternoon Coffee Break	
16.15 – 16.40	Dietmar Krauss-Varban	Hybrid Simulations of Reconnection: bridging the Span from Kinetic Physics to Global Scales
16.40 – 17.05	Tooru Sugiyama	MHD-PIC Interlocked Simulation Model in space Plasma: Application to Collisionless Shocks
17.05 – 17.30	Giovanni Lapenta	Electrostatic fields and Momentum Creation and Transport in Space and Laboratory Plasmas
Conference end		

June,11 Monday to June,14 Thursday
POSTER SESSION

No	Author	Title
1	Volodymyr Kryvdyk	Numerical Modeling of Relativistic Jets from Collapsing stars
2	Romana Ratkiewicz Jolanta Grygorczuk	Neutral Hydrogen Distribution within the Termination Shock and Beyond
3	Rony Touma	Central Finite Volume Methods with CTCS Magnetic Flux Treatment for Shallow water Magnetohydrodynamics
4	Benoît Commerçon	Comparison of Two Numerical Methods (AMR and SPH) for the Simulation of Collapse and Fragmentation of Dense Pre-stellar Cores
5	Ofer Cohen	Numerical Analysis of the May,12 1997 CME event
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List of Participants**

1. *Tahar Amari, Ecole Polytechnique, France*
2. *Paul Arminjon, University of Montreal, Canada*
3. *Maha Ashour-Abdalla, UC Los Angeles, USA*
4. *Edouard Audit, CEA/DAPNIA/Saclay, France*
5. *Dinshaw Balsara, University of Notre Dame, USA*
6. *Max Barkov, University of Leeds, UK*
7. *Sergey Borovikov, UC Riverside, USA*
8. *Allan Sacha Brun, CEA/DAPNIA/Saclay, France*
9. *Jörg Büchner, Max-Planck-Institut für Sonnensystemforschung, Germany*
10. *Chuxin Chen, University of Science and Technology of China*
11. *Andrea Ciardi, Observatoire de Paris, France*
12. *John Clyne, National Center for Atmospheric Research (keynote speaker), USA*
13. *Ofer Cohen, University of Michigan, USA*
14. *Benoît Commerçon, CEA/DAPNIA/Saclay, France*
15. *John Dorelli, University of New Hampshire, USA*
16. *Turlough Downes, Dublin City University, Ireland*
17. *Anshu Dubey, University of Chicago, USA*

18. *Horst Fichtner, Ruhr-University, Bochum, Germany*
19. *Vladimir Florinski, UC Riverside, USA*
20. *Thierry Foglizzo, CEA/Saclay, France*
21. *Sébastien Galtier, IAS Université Paris-Sud, France*
22. *Thomas Gardiner, Cray Inc., Ireland*
23. *Melvyn Goldstein, Goddard Space Flight Center, USA*
24. *Matthias Gonzalez, Madrid Polytechnical University, Spain*
25. *Jolanda Grygorczuk, Space Science Center, Warsaw, Poland*
26. *Katharine Gurski, George Washington University, USA*
27. *Tomoyuki Hanawa, Chiba University, Japan*
28. *Jacob Heerikhuisen, UC Riverside, USA*
29. *Masahiro Hoshino, Tokyo University, Japan*
30. *Vlad Izmodenov, Moscow State University, Russia*
31. *Pekka Janhunen, Finnish Meteorological Institute (keynote speaker), Finland*
32. *Riku Jarvinen, Finnish Meteorological Institute, Finland*
33. *George Jordan, Chicago University, USA*
34. *Hyesung Kang, Pusan National University, Korea*
35. *Serguei Komissarov, University of Leeds, UK*
36. *Dietmar Krauss-Varban, UC Berkeley, USA*
37. *Igor Kryukov, UC Riverside, USA*
38. *Volodymyr Kryvdyk, University of Kyiv, Ukraine*
39. *Kanya Kusano, Earth Simulator Center, JAMSTEC, Japan*
40. *Giuseppe Lanzafame, Astronomical Observatory, Catania, Italy*
41. *Giovanni Lapenta, Katholieke Universiteit Leuven, Belgium*
42. *Alexander Lazarian, University of Wisconsin, Madison (keynote speaker), USA*
43. *Gang Li, UC Riverside / UC Berkeley, USA*
44. *Shengtai Li, LANL, USA*
45. *Edward Liverts, Ben-Gurion University, Israel*
46. *Burlen Loring, University of New Hampshire, USA*
47. *Frederic Masset, CEA/DAPNIA/Saclay, France*
48. *Takahiro Miyoshi, Hiroshima University, Japan*
49. *Jean-Philippe Nominé, CEA/DAM, France*
50. *Jerome Novak, Observatory of Meudon, France*
51. *Dusan Odstrcil, NOAA, USA*
52. *Michael Papka, Argonne National Laboratory, USA*

53. *Aleksei Parnowski, Kyiv, Ukraine*
54. *Nikolai Pogorelov, UC Riverside, USA*
55. *Daniel Pomarede, CEA/DAPNIA/Saclay, France*
56. *David Porter, University of Minnesota (keynote speaker), USA*
57. *Joachim Raeder, University of New Hampshire, USA*
58. *Yann Rasera, University of New Hampshire, USA*
59. *Mark Rast, University of Colorado, USA*
60. *Romana Ratkiewicz, Space Science Center, Warsaw, Poland*
61. *Sergej Rjasanow, Mathematik Universität des Saarlandes, Saarbruecken, Germany*
62. *Wolfram Rosenbaum, IGPM, RWTH Aachen, Germany*
63. *Dongsu Ryu, Chungnam National University, Korea*
64. *Stanislav Sazykin, Rice University, USA*
65. *Dastgeer Shaikh, UC Riverside, USA*
66. *Igor Sokolov, University of Michigan, USA*
67. *Tooru Sugiyama, JAMSTEC, Japan*
68. *Stephen O'Sullivan, University College Dublin, Ireland*
69. *Bruno Thooris, CEA/DAPNIA/Saclay, France*
70. *Romain Teyssier, CEA/DAPNIA/Saclay, France*
71. *Gabor Tóth, University of Michigan (keynote speaker), USA*
72. *Rony Touma, Lebanese American University, Lebanon*
73. *Gunther Weber, LBNL (keynote speaker), USA*
74. *Huirong Yan, CITA, Canada*
75. *Gary Zank, UC Riverside, USA*
76. *Ming Zhang, Florida Institute of Technology, USA*