

OCAMI Joint Usage/Research

Space-time topology behind formation of micro-macro magneto-vortical structure manifested by Nambu mechanics

Co-organized by **NITEP**: Nambu Yoichiro Institute of Theoretical and Experimental Physics, Osaka City University

Date: September 28 (Mon) - October 1 (Thu), 2020

Venue: Media Center, Osaka City University (Sugimoto Campus)

<https://indico.nitep.osaka-cu.ac.jp/event/65/>

Remote attendance via Zoom is accepted

September 28 (Mon)

※ [Z]: talk via Zoom

- 13:10 ~ 13:15 Opening address by Yoshihiro Ohnita (President of OCAMI)
Chair (13:15 - 15:30) C. Matsuoka (Osaka City U.)
- 13:15 ~ 14:00 Y. Fukumoto (Kyushu U.), Rong Zou (Zhejiang Normal U.)
Casimirs and Nambu brackets for fluid dynamics and magnetohydrodynamics
- 14:00 ~ 14:45 A. Sugamoto (Ochanomizu U.), K. Bamba (Fukushima U.), T. Kawamura (Ochanomizu U.), A. Kuwana (Gunma U.), Y. Nagata (Meisei U.), M. Saitou (Ochanomizu U.)
Nambu dynamics and hydrodynamics of granular material
- 14:45 ~ 15:30 K. Maruyoshi (Seikei U.), T. Ota (Osaka U & RIKEN), J. Yagi (Perimeter Inst. Theor. Phys.)
Wilson-'t Hooft line defects as transfer matrices
- 15:30 ~ 16:00 Tea break
Chair (16:00 - 17:30) K. Maruyoshi (Seikei U.)
- 16:00 ~ 16:45 Cristel Chandre (CNRS/Aix-Marseille Université) [Z]
Hamiltonian reductions from kinetic to fluid models
- 16:45 ~ 17:30 T.-H. Watanabe, S. Maeyama, and H. Sato (Nagoya U.) [Z]
Multi-scale and multi-directional turbulence simulation of fusion plasma

September 29 (Tue)

Chair (9:15 - 12:00) Y. Fukumoto (Kyusyu U.)

- 9:15 ~ 10:00 Philip J. Morrison (U. Texas, Austin) [Z]
Noncanonical Poisson, Dirac, and Nambu brackets for classical fluid and plasma dynamics and quantum mechanics

- 10:00 ~ 10:45 Z. Yoshida (U. Tokyo), Philip J. Morrison (U. Texas, Austin) [Z]
Deformation of Lie–Poisson algebras and chirality
- 10:45 ~ 11:15 Tea break
- 11:15 ~ 12:00 Y. Mitsumatsu (Chuo U.) [Z]
Contact structures and foliations on 3-manifolds and asymptotic linking of incompressible flows
- 12:00 ~ 14:00 Lunch break
- Chair (14:00 - 16:45) T. Oota (Osaka City U.)
- 14:00 ~ 14:45 T. Sakajo (Kyoto U.) [Z]
Vortex dynamics on the surface of a torus
- 14:45 ~ 15:30 T. Tauchi (Kyushu U.), T. Yoneda (U. Tokyo) [Z]
Existence of a conjugate point in the incompressible Euler flow on an ellipsoid
- 15:30 ~ 16:00 Tea break
- 16:00 ~ 16:45 T. Yoneya (U. Tokyo) [Z]
Two approaches toward quantization of Nambu mechanics
- 16:45 ~ 17:30 Discussions Moderator: H. Itoyama (Osaka City U.)

September 30 (Wed)

Chair (9:15 - 12:00) N. Sato (U. Tokyo)

- 9:15 ~ 10:00 A. Horikoshi (Tokyo City U.) [Z]
Hidden Nambu structures in classical/semiclassical systems
- 10:00 ~ 10:45 T. Matsuyama (Nara U. Edu.)
Topological structures in macroscopic physical phenomena
- 10:45 ~ 11:15 Tea break
- 11:15 ~ 12:00 M. Kobayashi (Kochi U. Tech.) [Z]
Dual cascades of energy and helicity accompanying mass and spin in non-Abelian quantum turbulence of spinor Bose-Einstein condensates
- 12:00 ~ 14:00 Lunch break
- Chair (14:00 - 16:45) H. Itoyama (Osaka City U.)
- 14:00 ~ 14:45 N. Sato (U. Tokyo)
Existence, symmetry, and statistical properties of magnetofluidostatic equilibria
- 14:45 ~ 15:30 K. Shibata (Kyoto U. & Doshisha U.) [Z]
Extraordinary activity of magnetized plasmas in the sun, stars, and galaxies
- 15:30 ~ 16:00 Tea break

- 16:00 ~ 16:45 H. Ishihara, S. Matsuno (Osaka City U.)
Solutions to the Einstein-Maxwell-current system with Sasakian geometry
- 16:45 ~ 17:30 Discussions Moderator: Y. Fukumoto (Kyusyu U.)

October 1 (Thu)

Chair (9:15 - 12:00) H. Ishihara (Osaka City U.)

- 9:15 ~ 10:00 Yutaka Matsuo (U. Tokyo), Pei-Ming Ho (Natio. Taiwan U.)
The Nambu bracket and M-theory
- 10:00 ~ 10:45 S. Moriyama (Osaka City U.) [Z]
Nambu brackets, Chern-Simons theories, quantum curves and M2-branes
- 10:45 ~ 11:15 Tea break
- 11:15 ~ 12:00 Y. Suzuki (Aomori U.) [Z]
A numerical method based on the Nambu bracket for the three-dimensional vorticity equation
- 12:00 ~ 14:00 Lunch break
- Chair (14:00 -) Y. Matsuo (U. Tokyo)
- 14:00 ~ 14:45 Rong Zou (Zhejiang Normal U.), Y. Fukumoto (Kyushu U.) [Z]
Magnetorotational instability of MHD flows and the wave energy
- 14:45 ~ H. Itoyama (Osaka City U.)
Summary and outlook
Closing remarks by Hiroyuki Sakuragi (Vice President of Osaka City U.)

※ If you attend this conference, please visit the HP and make registration

<https://indico.nitep.osaka-cu.ac.jp/event/65/>

by clicking the button 'Registration' on the left

Organizers

Yasuhide Fukumoto (Kyushu U., PI), Hiroshi Itoyama (Osaka City U.)

Chihiro Matsuoka (Osaka City U.), Zensho Yoshida (U. Tokyo)