Third workshop on Soliton Theory, Nonlinear Dynamics and Machine Learning

Report of Contributions

https://indico.iaps.institute/e/solitons-nonlinear-machine-learning-2025

Contribution ID: **1** Type: **not specified**

OPENING

Contribution ID: **2** Type: **not specified**

Gaussian quantum entanglement in curved spacetime

Tuesday, August 19, 2025 10:00 AM (45 minutes)

Presenter: ISAR, Aurelian

Contribution ID: **3** Type: **not specified**

NPT entanglement witnesses in Gaussian states

Tuesday, August 19, 2025 11:00 AM (40 minutes)

Presenter: MIHAESCU, Tatiana

Contribution ID: **4** Type: **not specified**

Two-quanta features in coupled double-quantum-dot-cavity systems

Tuesday, August 19, 2025 11:40 AM (40 minutes)

Presenter: CECOI, Elena

Contribution ID: **5** Type: **not specified**

Phonon assisted cavity quantum electrodynamics of double-quantum-dots

Tuesday, August 19, 2025 1:40 PM (45 minutes)

Presenter: CEBAN, Victor

Contribution ID: **6** Type: **not specified**

Soliton Theory and Nonlinear Dynamics in the Human Body

Tuesday, August 19, 2025 3:00 PM (30 minutes)

Presenter: PIROVSKI, Nikola

Contribution ID: **7** Type: **not specified**

General discussion

Tuesday, August 19, 2025 4:00 PM (2 hours)

Contribution ID: **8** Type: **not specified**

Discovering symmetries from data by learning Lie algebras

Saturday, August 23, 2025 9:30 AM (30 minutes)

Presenter: MISHEV, Stoyan

Contribution ID: **9** Type: **not specified**

Enhanced Fault Diagnosis of Rolling Bearings Using LSTM Autoencoders and Feature-Based XG-Boost Classification

Saturday, August 23, 2025 10:30 AM (30 minutes)

Presenter: KOLEV, Atanas

Contribution ID: **10** Type: **not specified**

OPENING

Tuesday, August 19, 2025 9:30 AM (30 minutes)

Contribution ID: **11** Type: **not specified**

Gaussian quantum entanglement in curved spacetime

Presenter: ISAR, Aurelian

Contribution ID: **12** Type: **not specified**

Surface water waves interacting with vortices

Wednesday, August 20, 2025 9:30 AM (45 minutes)

Presenter: IVANOV, Rossen

Contribution ID: **13** Type: **not specified**

Thermodynamic properties of quantum spin systems: scaling and disorder

Wednesday, August 20, 2025 10:15 AM (45 minutes)

Presenter: GRAHOVSKI, Georgi

Contribution ID: **14** Type: **not specified**

Solitary wave dynamics within Whitham-type equations

Wednesday, August 20, 2025 11:30 AM (40 minutes)

Presenter: FLAMARION, Marcelo

Contribution ID: **15** Type: **not specified**

Breather and Rogue Wave Solutions of a New Three-Component System

Wednesday, August 20, 2025 12:10 PM (40 minutes)

Presenter: STEFANOV, Aleksander

Contribution ID: **16** Type: **not specified**

Modelling of Intermediate Internal Ocean Waves in the Presence of Currents and Uneven Bottom Topography

Wednesday, August 20, 2025 2:00 PM (30 minutes)

Presenter: IVANOVA, Lyudmila

Contribution ID: **17** Type: **not specified**

Scientific Applications of Small-Aperture Astronomical Observatories: Case Studies in Variable Star and Exoplanet Research

Wednesday, August 20, 2025 2:30 PM (30 minutes)

Presenter: ANTONOV, Nikola

Contribution ID: **18** Type: **not specified**

Fighting digital fraudsters in credit lending context – an alternative approach leveraging the GA4 data

Saturday, August 23, 2025 10:00 AM (30 minutes)

Presenter: MUSHMOV, Apostol

Contribution ID: **19** Type: **not specified**

General Discussion

Wednesday, August 20, 2025 4:00 PM (2 hours)

Contribution ID: **20** Type: **not specified**

Lensing and light rings of Rotating Boson Stars with synchronized scalar hair

Thursday, August 21, 2025 11:30 AM (40 minutes)

Presenter: GYULCHEV, Galin

Contribution ID: **21** Type: **not specified**

Neutron stars in modified theories of gravity with scalar field

Thursday, August 21, 2025 12:10 PM (40 minutes)

Presenter: STAYKOV, Kalin

Contribution ID: **22** Type: **not specified**

Reparametrization Invariant Scaling Symmetry as resolution of the Li-7 problem within the BBNS

Thursday, August 21, 2025 9:30 AM (45 minutes)

Presenter: GUEORGUIEV, Vesselin

Contribution ID: **23** Type: **not specified**

On consistency conditions for SRRT inflation in 2-field cosmological models

Thursday, August 21, 2025 10:15 AM (45 minutes)

Presenter: BABALIC, Elena-Mirela

Contribution ID: **24** Type: **not specified**

Effects of plasma and relativistic aberrations on the shadows of traversable wormholes

Thursday, August 21, 2025 2:00 PM (30 minutes)

Presenter: ANGELOV, Tsanimir

Contribution ID: **25** Type: **not specified**

Signatures of the dark matter halo in the polarized emission around galactic black holes

Thursday, August 21, 2025 2:30 PM (30 minutes)

Presenter: BEKIR, Rasim

Contribution ID: **26** Type: **not specified**

General dscussion

Thursday, August 21, 2025 3:30 PM (2h 30m)

Contribution ID: **27** Type: **not specified**

An Open-Source Embedded AI Vision Platform for Advanced Driver Assistance Systems

Saturday, August 23, 2025 11:15 AM (30 minutes)

Presenter: TEMELAKIEV, Lyuben

Contribution ID: **28** Type: **not specified**

Beam parameters estimation with machine learning from incomplete data sets

Saturday, August 23, 2025 11:45 AM (30 minutes)

Presenter: IVANOV, Svetoslav

Contribution ID: **29** Type: **not specified**

Application of equivariant transformations in neural networks to classification of galaxy images

Saturday, August 23, 2025 12:15 PM (30 minutes)

Presenter: FOTEVA, Yoana

Contribution ID: **30** Type: **not specified**

Closing

Saturday, August 23, 2025 12:45 PM (15 minutes)

Contribution ID: **31** Type: **not specified**

Riemann–Hilbert Problems and Integrable Equations

Friday, August 22, 2025 9:30 AM (45 minutes)

Presenter: GERDJIKOV, Vladimir

Contribution ID: **32** Type: **not specified**

Mathematical theories and models for the nonlinear proliferation of gliomas

Friday, August 22, 2025 10:15 AM (45 minutes)

Presenter: CONSTANTINESCU, Radu

Contribution ID: **33** Type: **not specified**

Characterization of Petrov manifolds using Stanilov curvature operators

Friday, August 22, 2025 11:20 AM (40 minutes)

Presenter: VIDEV, Veselin

Contribution ID: **34** Type: **not specified**

Load-Aware Greedy Routing algorithm with Spectral Embeddings and adaptive Utilization-Weighted Penalties for Optimal Link Utilization

Friday, August 22, 2025 12:00 PM (30 minutes)

Presenter: VEKOV, Hristo

Contribution ID: **35** Type: **not specified**

A New Generalization of the Liouville-Jacobi Identity

Friday, August 22, 2025 12:30 PM (40 minutes)

Presenter: MARKOV, Lubomir

Contribution ID: **36** Type: **not specified**

Integrable discretization of coupled additive Bogoyavlensky and its multiple soliton solutions

Friday, August 22, 2025 2:00 PM (40 minutes)

Presenter: BABALIC, Corina

Contribution ID: **37** Type: **not specified**

On the use of auxiliary equations for solving nonlinear ordinary differential equations

Friday, August 22, 2025 2:40 PM (40 minutes)

Presenter: PAUNA, Alina

Contribution ID: **38** Type: **not specified**

General Discussion

Friday, August 22, 2025 3:40 PM (2h 20m)

Contribution ID: **39** Type: **not specified**

Shaping Solitons with Complex Dispersion: Geometric and Dynamical Insights From The Modified KdV-Burgers Equation toward Optical Pulse Control

Tuesday, August 19, 2025 2:25 PM (35 minutes)

Presenter: SAAD, Md. Abdus