

# **Second workshop on Soliton Theory, Nonlinear Dynamics and Machine Learning**

## **Report of Contributions**

Contribution ID: 1

Type: **not specified**

## Opening

*Saturday, 17 August 2024 09:00 (30 minutes)*

Contribution ID: 2

Type: **not specified**

# **Water waves over a variable bottom and soliton propagation**

*Saturday, 17 August 2024 09:30 (50 minutes)*

**Presenter:** IVANOV, Rossen

Contribution ID: 3

Type: **not specified**

# **Nonlinear evolution of black holes in modified theories of gravity**

*Saturday, 17 August 2024 10:50 (50 minutes)*

**Presenter:** DONEVA, Daniela

Contribution ID: 4

Type: **not specified**

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

*Saturday, 17 August 2024 11:40 (40 minutes)*

**Presenter:** MISHEV, Stoyan

Contribution ID: 5

Type: **not specified**

# **Solving differential equations with physics informed neural networks**

*Saturday, 17 August 2024 14:00 (30 minutes)*

**Presenter:** YAZADJIEV, Stoytcho

Contribution ID: 6

Type: **not specified**

## **Period variability of cataclysmic star AM Herculus. New photometric observations.**

*Saturday, 17 August 2024 14:30 (40 minutes)*

**Presenter:** RUMEN BOGDANOVSKI AND NIKOLA ANTONOV

Contribution ID: 7

Type: **not specified**

## General discussion

*Saturday, 17 August 2024 15:30 (2h 30m)*



Contribution ID: 8

Type: **not specified**

## Polynomial Lax pairs with a Coxeter reduction

*Sunday, 18 August 2024 09:00 (50 minutes)*

**Presenter:** STEFANOV, Alexander

Contribution ID: 9

Type: **not specified**

# **Singularity analysis and bilinear approach to some Bogoyavlensky equations**

*Sunday, 18 August 2024 09:50 (50 minutes)*

**Presenter:** CARSTEA, Adrian Stefan

Contribution ID: **10**

Type: **not specified**

# **Irreversibility and dynamics of quantum correlations in open quantum systems**

*Sunday, 18 August 2024 11:00 (50 minutes)*

**Presenter:** ISAR, Aurelian

Contribution ID: **11**

Type: **not specified**

# **Dynamics of strongly coupled harmonic oscillators in Gaussian noisy channels**

*Sunday, 18 August 2024 14:00 (30 minutes)*

**Presenter:** MIHAESCU, Tatiana

Contribution ID: 12

Type: **not specified**

# Mathematical Analysis of the Van der Waals Equation

*Sunday, 18 August 2024 14:30 (40 minutes)*

**Presenter:** PRODANOV, Emil

Contribution ID: **13**

Type: **not specified**

## General discussion

*Sunday, 18 August 2024 15:30 (2h 30m)*

Contribution ID: 14

Type: **not specified**

## **Riemann–Hilbert Problems and Integrable Equations**

*Monday, 19 August 2024 09:00 (50 minutes)*

**Presenter:** GERDJIKOV, Vladimir

Contribution ID: 15

Type: **not specified**

## **Chaffee-Infante type equations with given classes of solutions**

*Monday, 19 August 2024 09:50 (50 minutes)*

**Presenter:** CONSTANTINESCU, Radu



Contribution ID: 16

Type: **not specified**

## **On the N-wave hierarchy with constant boundary conditions**

*Monday, 19 August 2024 11:00 (50 minutes)*

**Presenter:** GRAHOVSKI, Georgi

Contribution ID: 17

Type: **not specified**

## **Contact Hamilton-Jacobi equations and consistency of strong SRRT inflation**

*Monday, 19 August 2024 14:00 (40 minutes)*

**Presenter:** BABALIC, Mirela

Contribution ID: **18**

Type: **not specified**

## **Generalized Dodd-Bullough-Mikhailov equations with given classes of solutions**

*Monday, 19 August 2024 14:40 (40 minutes)*

**Presenter:** PAUNA, Alina-Maria

Contribution ID: **19**

Type: **not specified**

# **The Lagrangian approach to modelling waves with a linear current component**

*Monday, 19 August 2024 15:20 (30 minutes)*

**Presenter:** CURTIN, Conor

Contribution ID: **20**

Type: **not specified**

## General Discussion

*Monday, 19 August 2024 16:10 (1h 50m)*

Contribution ID: 21

Type: **not specified**

# **Reparametrization Invariance and Its Relation to the Dark Energy and Dark Matter Phenomena**

**Presenter:** GUEORGUEV, Vesselin

Contribution ID: 22

Type: **not specified**

# Reparametrization Invariance and Its Relation to the Dark Energy and Dark Matter Phenomena

*Tuesday, 20 August 2024 09:00 (50 minutes)*

**Presenter:** GUEORGUIEV, Vesselin

Contribution ID: 23

Type: **not specified**

## Photon spheres

*Tuesday, 20 August 2024 10:10 (30 minutes)*

**Presenter:** YAZADJIEV, Stoytcho



Contribution ID: 24

Type: **not specified**

# **Images of a thin accretion disk around Kerr Black Hole with synchronized scalar hair**

*Tuesday, 20 August 2024 10:40 (50 minutes)*

**Presenter:** GYULCHEV, Galin

Contribution ID: 25

Type: **not specified**

## **Beam parameters estimation with machine learning from incomplete data sets**

*Tuesday, 20 August 2024 14:00 (40 minutes)*

**Presenter:** IVANOV, Svetoslav

Contribution ID: 26

Type: **not specified**

## **Applicability evaluation of selected xAI methods for machine learning algorithms for signal parameters extraction**

*Tuesday, 20 August 2024 14:40 (30 minutes)*

**Presenter:** DIMITROVA, Калина

Contribution ID: 27

Type: **not specified**

## **An integral formula, with an application to differential equations**

*Tuesday, 20 August 2024 15:10 (50 minutes)*

**Presenter:** MARKOV, Lubomir

Contribution ID: **28**

Type: **not specified**

## General Discussion

*Tuesday, 20 August 2024 16:30 (1h 30m)*

Contribution ID: 29

Type: **not specified**

# On a Method for Solving of Equations of Mathematical Physics in Multidimension

*Wednesday, 21 August 2024 09:00 (50 minutes)*

**Presenter:** TODOROV, Michail

Contribution ID: 30

Type: **not specified**

# Variational Method for Inverse Problems in Identifying Solitary-Wave Solutions

*Wednesday, 21 August 2024 09:50 (50 minutes)*

**Presenter:** MARINOVA, Rossitza

Contribution ID: 31

Type: **not specified**

# Application of Soliton Theory in Business Process Analysis

*Wednesday, 21 August 2024 11:00 (30 minutes)*

**Presenter:** IVANOVA, Antonina



Contribution ID: 32

Type: **not specified**

# **Approximate solutions to ordinary differential equations using neural networks and Monte Carlo**

*Wednesday, 21 August 2024 11:30 (30 minutes)*

**Presenter:** VEKOV, Hristo

Contribution ID: 33

Type: **not specified**

# **Application of machine learning methods to predict and analyze the condition of rolling bearings**

*Wednesday, 21 August 2024 12:00 (30 minutes)*

**Presenter:** KOLEV, Atanas

Contribution ID: **34**

Type: **not specified**

## Closing

*Wednesday, 21 August 2024 12:30 (20 minutes)*