

# **MAP-Fis Essays Workshop**

## **Report of Contributions**

Contribution ID: 0

Type: **not specified**

## Invited Talk

**Presenter:** Prof. FREITAS, Paulo (INL)

Contribution ID: 1

Type: **not specified**

## Final Remarks

**Presenter:** Prof. SCHMOOL, David (Universidade do Porto)

Contribution ID: 5

Type: **not specified**

## **Palestra 3/Talk 3**

Contribution ID: **10**

Type: **not specified**

## Welcome

*Friday 31 May 2024 09:00 (10 minutes)*

### Summary

**Presenter:** VASILEVSKIY, Mikhail (University of Minho)

**Session Classification:** Opening Session

Contribution ID: 16

Type: **not specified**

## **Hematite nanowires for solar water splitting: development and structure optimization**

**Presenter:** Dr AZEVEDO, João (Universidade do Porto)

Contribution ID: 19

Type: **not specified**

## **Exchange coupled donor dimers in nanocrystal quantum dots**

**Presenter:** Dr ALMEIDA, António José (Universidade de Aveiro)

Contribution ID: 20

Type: **not specified**

## **Palestra de Introdução/Overview Talk**



Contribution ID: **21**

Type: **not specified**

## **Palestra 1/Talk 1**

Contribution ID: 22

Type: **not specified**

## **Palestra 2/Talk 2**

Contribution ID: **28**

Type: **not specified**

## **Properties of topological matter lacking translational invariance**

*Friday 31 May 2024 09:40 (25 minutes)*

Supervisor: Eduardo Filipe Vieira de Castro (UP)

Evaluation Panel: Eduardo Filipe Vieira de Castro, Miguel Araújo (University of Évora)

### **Summary**

**Presenter:** SANTOS SILVA, João (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 37

Type: **not specified**

## **Non-linear optical response**

*Friday 31 May 2024 09:15 (25 minutes)*

Supervisor: João Manuel Viana Parente Lopes (UP)

Evaluation Panel: João Manuel Viana Parente Lopes, Yuliy Bludov (UM)

### **Summary**

**Presenter:** PINHO, João (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 39

Type: **not specified**

## **Study of the magnetic and vibrational properties of NdFeO<sub>3</sub>**

*Friday 31 May 2024 10:05 (25 minutes)*

Supervisor: Estelina Lora Silva, Joaquim Agostinho Moreira (UP)

Evaluation Panel: Estelina Lora Silva, Bernardo Almeida (UM)

### **Summary**

**Presenter:** AASIM, Muhammad (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 50

Type: **not specified**

# Superconductivity in quasiperiodic moiré materials

*Friday 31 May 2024 10:30 (25 minutes)*

Supervisor: Eduardo V. Castro (UP)

Evaluation Panel: Eduardo V. Castro, António T. Costa (INL)

## Summary

**Presenter:** OLIVEIRA, Ricardo (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 51

Type: **not specified**

# Non-linear Evolutions of Black Holes in Numerical Relativity

*Friday 31 May 2024 09:40 (25 minutes)*

Supervisor: Miguel Zilhão (UA)

Evaluation Panel: Miguel Zilhão (UA), Raimon Luna (UA)

## Summary

**Presenter:** MOTA VALENTE FERREIRA, José Pedro (University of Aveiro)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 52

Type: **not specified**

## **Extreme mass ratio inspirals around non-Kerr compact objects**

*Friday 31 May 2024 11:10 (25 minutes)*

Supervisor: Carlos Alberto Ruivo Herdeiro (UA)

Evaluation Panel: Carlos Alberto Ruivo Herdeiro, Nicolas Sanchis-Gual (University of Valencia)

### **Summary**

**Presenter:** MARIANO, Manuel (University of Aveiro)

**Session Classification:** MAP-Fis Essays Presentations



Contribution ID: 53

Type: **not specified**

# Deep-Learning Classification and Parameter Inference of Rotational Core-Collapse Supernovae

*Friday 31 May 2024 10:05 (25 minutes)*

Supervisor: Antonio Onofre, José Antonio Font, Alejandro Torres-Forné

Evaluation Panel: José Antonio Font (University of Valencia), Guilherme Raposo (UA)

## Summary

**Presenter:** NUNES, Solange (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 54

Type: **not specified**

# Deep Learning for transient signals in gravitational-wave astronomy

*Friday 31 May 2024 10:30 (25 minutes)*

Supervisor: Antonio Onofre, Jose Antonio Font, Alejandro Torres-Forné

Evaluation Panel: Jose Antonio Font (University of Valencia), Nuno Castro (UM)

## Summary

**Presenter:** FERNANDES, Tiago (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 55

Type: **not specified**

## **Solving the Hubble tension with nonminimally coupled $f(R)$ theories of gravity**

*Friday 31 May 2024 09:15 (25 minutes)*

Supervisor: Orfeu Bertolami (UP)

Evaluation Panel: Orfeu Bertolami (UP), Guilherme Raposo (UA)

### **Summary**

**Presenter:** BARROSO VARELA, Miguel (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 56

Type: **not specified**

## Accretion patterns from exotic compact objects

*Friday 31 May 2024 11:35 (25 minutes)*

Supervisor: Antonio Onofre, Héctor Raúl Olivares Sánchez, Antonio Jose Font

Evaluation Panel: Héctor Raúl Olivares Sánchez (UA), Pedro Cunha (UA)

### Summary

**Presenter:** PASSOS, Pedro (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 57

Type: **not specified**

# Machine learning anomaly detection techniques for the search of new signals at LHC with ATLAS experiment

*Friday 31 May 2024 12:00 (25 minutes)*

Supervisor: Nuno Castro, Rute Pedro

Evaluation Panel: Nuno Castro (UM), António Morais (UA)

## Summary

**Presenter:** BERTI, Annalisa (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 58

Type: **not specified**

## **Dusty Atmospheric Rivers: relationship between intense transport of water vapour and aerosols in the Iberian Peninsula**

*Friday 31 May 2024 11:10 (25 minutes)*

Supervisor: Carla Maria dos Santos Gama da Silva, Irina Gorodetskaya

Evaluation Panel: Carla Maria dos Santos Gama da Silva (UA), José Castaneira (UA)

### **Summary**

**Presenter:** LUÍS, Diogo (University of Aveiro)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 59

Type: **not specified**

## **Impactos das alterações climáticas na formação de Cold Air Pools na Região Demarcada do Douro**

*Friday 31 May 2024 11:35 (25 minutes)*

Supervisor: David João da Silva Carvalho, João Carlos Andrade Santos, António Graça

Evaluation Panel: David João da Silva Carvalho (UA), Alfredo Rocha (UA)

### **Summary**

**Presenter:** TEIXEIRA, Marta (University of Aveiro)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: **60**

Type: **not specified**

## **TO BE DETERMINED**

*Friday 31 May 2024 12:00 (25 minutes)*

Supervisor:

Evaluation Panel:

### **Summary**

**Presenter:** CHIAHA, SHEDRACH (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations



Contribution ID: **61**

Type: **not specified**

## **Emergence of novel properties at the interfaces in oxide heterostructures and superlattices**

*Friday 31 May 2024 14:00 (25 minutes)*

Supervisor: Luis Silvino Alves Marques (UM)

Evaluation Panel: Luis Silvino Alves Marques, José Coutinho (UA)

### **Summary**

**Presenter:** SILVA, Alexandre (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: **62**

Type: **not specified**

# **Naturally Layered Ruddlesden-Popper Ferroelectrics towards Energy Efficient Materials**

*Friday 31 May 2024 14:25 (25 minutes)*

Supervisor: Armandina Lima Lopes (UP)

Evaluation Panel: Armandina Lima Lopes, José Pedro Basto (UM)

## **Summary**

**Presenter:** CESÁRIO, António (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: **63**

Type: **not specified**

# **Biofunctional Cyclic Dipeptide Nanofibers for Energy Harvesting and Nonlinear Optical Conversion**

*Friday 31 May 2024 14:50 (25 minutes)*

Supervisor: Bernardo Almeida (UM)

Evaluation Panel: Bernardo Almeida, André Pereira (UP)

## **Summary**

**Presenter:** SANTOS, Daniela (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: **64**

Type: **not specified**

## **Spatially and temporally modulated active patch for skin cancer treatment**

*Friday 31 May 2024 15:15 (25 minutes)*

Supervisor: Clarisse Marta de Oliveira Ribeiro (UM)

Evaluation Panel: Clarisse Marta de Oliveira Ribeiro, Marlene Lúcio (UM)

### **Summary**

**Presenter:** BOGAS, Diana (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 65

Type: **not specified**

## Remediação ambiental

*Friday 31 May 2024 15:40 (25 minutes)*

Supervisor: Senentxu Lanceros-Méndez (UM)

Evaluation Panel: Senentxu Lanceros-Méndez, Mario Rui Pereira (UM)

### Summary

**Presenter:** BOANO, Paulo (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 66

Type: **not specified**

## **Coding the Cosmos, Searching for Superstrings**

*Friday 31 May 2024 15:40 (25 minutes)*

Supervisor: Carlos Martins (UP)

Evaluation Panel: Carlos Martins, António Morais (UA)

### **Summary**

**Presenter:** HEILEMANN, Ricarda (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 67

Type: **not specified**

## **Bootstrap and Holographic CFTs**

*Friday 31 May 2024 14:00 (25 minutes)*

Supervisor: Vasco Gonçalves (UP)

Evaluation Panel: Vasco Gonçalves, Eduardo Castro (UP)

### **Summary**

**Presenter:** SERRANO, Filipe (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: **68**

Type: **not specified**

## **Gravitational echoes from primordial phase transitions**

*Friday 31 May 2024 15:15 (25 minutes)*

Supervisor: António Morais (UA)

Evaluation Panel: António Morais, António Onofre (UM)

### **Summary**

**Presenter:** FINETTI, Marco (University of Aveiro)

**Session Classification:** MAP-Fis Essays Presentations



Contribution ID: **69**

Type: **not specified**

# A multi-point bootstrap approach to Quantum Field Theory

*Friday 31 May 2024 14:25 (25 minutes)*

Supervisor: Miguel Costa (UP)

Evaluation Panel: Miguel Costa, Bruno Amorim (UM)

## Summary

**Presenter:** RODRIGUES, Ricardo (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 70

Type: **not specified**

# **Light and Ultralight Dark Matter: exploring novel synergies between particle physics, strong gravity and cosmology**

*Friday 31 May 2024 14:50 (25 minutes)*

Supervisor: António Morais

Evaluation Panel: António Morais (UA), Vasco Gonçalves (UP)

## **Summary**

**Presenter:** OLIVEIRA, Vinícius

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 71

Type: **not specified**

## **Combined local probe technique and ab-initio calculation on layered Perovskites**

*Friday 31 May 2024 16:20 (25 minutes)*

Supervisor: João Pedro Esteves Araújo (UP)

Evaluation Panel: João Pedro Esteves Araújo, António Luís Ferreira (UA)

### **Summary**

**Presenter:** SILVA DE SOUSA, Pedro Alexandre (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 72

Type: **not specified**

## **Understanding anomalies in liquid water with upconversion thermometry**

*Friday 31 May 2024 16:45 (25 minutes)*

Supervisor: Luís António Ferreira Martins Dias Carlos (UA)

Evaluation Panel: Luís António Ferreira Martins Dias Carlos, Joel Borges (UM)

### **Summary**

**Presenter:** FILHO, Ramon

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 73

Type: **not specified**

# Advanced Photoelectrodes in Photoelectrochemical Cells for Solar Water Splitting and Green Hydrogen Generation

*Friday 31 May 2024 17:10 (25 minutes)*

Supervisor: Arlete Ondina Alves da Silva Apolinário (UP)

Evaluation Panel: Arlete Ondina Alves da Silva Apolinário, Luís Carlos (UA)

## Summary

**Presenter:** GONÇALVES, Sofia (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 75

Type: **not specified**

# **Insect-Brain Inspired Neuromorphic Nanophotonic Devices**

*Friday 31 May 2024 16:20 (25 minutes)*

Supervisor: Bruno Romeira (INL), Michael Belsley (UM)

Evaluation Panel: Bruno Romeira, Ariel Guerreiro (UP)

## **Summary**

**Presenter:** AZEVEDO, João (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 76

Type: **not specified**

## **Hybrid optical fiber sensors interfaced with interfaced with micro/nano fabrication technologies: towards a multisensing platform**

*Friday 31 May 2024 16:45 (25 minutes)*

Supervisor: Marta Sofia dos Anjos Ferreira (UA)

Evaluation Panel: Marta Sofia dos Anjos Ferreira, João Pedro Alpuim (UM)

### **Summary**

**Presenter:** SANTOS, João (University of Aveiro)

**Session Classification:** MAP-Fis Essays Presentations

Contribution ID: 77

Type: **not specified**

# Development of polarimetric remote sensing technique for road condition inquiry and fast probing

*Friday 31 May 2024 17:10 (25 minutes)*

Supervisor: José Carlos Viana Gomes (UM)

Evaluation Panel: José Carlos Viana Gomes, Nikolay Sobolev (UA)

## Summary

**Presenter:** ROMANYSHYN, Nazar (University of Minho)

**Session Classification:** MAP-Fis Essays Presentations



Contribution ID: 78

Type: **not specified**

# Versatile Neuromorphic Frameworks for Optical Computing

*Friday 31 May 2024 17:35 (25 minutes)*

Supervisor: Nuno Miguel Azevedo Silva (UP)

Evaluation Panel: Nuno Miguel Azevedo Silva, Mikhail Vasilevskiy (UM)

## Summary

**Presenter:** ROCHA, Vicente (University of Porto)

**Session Classification:** MAP-Fis Essays Presentations