

# 1st General Meeting of COST Action COSMIC WISPerS (CA21106)



## Report of Contributions

Contribution ID: 1

Type: **not specified**

# Welcome

**Session Classification:** Management Committee

Contribution ID: 2

Type: **not specified**

# **Stellar Probes of Feebly Interacting Particles, Circa 2023**

*Tuesday, 5 September 2023 09:30 (40 minutes)*

**Presenter:** VITAGLIANO, Edoardo

**Session Classification:** WG3 (Astrophysics)

Contribution ID: 3

Type: **not specified**

## High-energy photons, magnetic fields and WISP searches

*Wednesday, 6 September 2023 10:10 (40 minutes)*

**Presenter:** KACHELRIESS, Michael (NTNU)

**Session Classification:** WG2 (Dark Matter and Cosmology)

Contribution ID: 4

Type: **not specified**

## Axion Clouds around Pulsars

*Tuesday, 5 September 2023 11:20 (40 minutes)*

**Presenter:** WITTE, Samuel (University of Barcelona)

**Session Classification:** WG3 (Astrophysics)

Contribution ID: 5

Type: **not specified**

## **Dark Matter in the Milky Way: shortcoming & dynamical tests**

*Tuesday, 5 September 2023 12:00 (40 minutes)*

**Presenter:** CASTANO, María Benito (Tartu Observatory)

**Session Classification:** WG3 (Astrophysics)

Contribution ID: 6

Type: **not specified**

## Report on WG3 Activities

*Tuesday, 5 September 2023 14:30 (30 minutes)*

**Presenter:** CAPUTO, Andrea (CERN)

**Session Classification:** Round Table

Contribution ID: 7

Type: **not specified**

## Discussion

*Tuesday, 5 September 2023 15:00 (30 minutes)*

**Session Classification:** Round Table



Contribution ID: 8

Type: **not specified**

## QCD axion and density effects in stars

*Tuesday, 5 September 2023 15:30 (20 minutes)*

**Presenter:** STELZL, Stefan (EPFL( Lausanne))

**Session Classification:** WG3 (Astrophysics)

Contribution ID: 9

Type: **not specified**

## Radio Signatures of axion-like particles

*Tuesday, 5 September 2023 15:50 (20 minutes)*

**Presenter:** SIGL, Guenter (Universität Hamburg)

**Session Classification:** WG3 (Astrophysics)

Contribution ID: **10**

Type: **not specified**

## **Large scale structure data and DM fifth force**

*Tuesday, 5 September 2023 16:30 (20 minutes)*

**Presenter:** BOTTARO, Salvatore (Tel Aviv University)

**Session Classification:** WG3 (Astrophysics)

Contribution ID: **11**

Type: **not specified**

## **Primordial Black Holes and micro-lensing**

*Tuesday, 5 September 2023 16:10 (20 minutes)*

**Presenter:** Prof. HAFIZI, Mimoza (Tirana University)

**Session Classification:** WG3 (Astrophysics)

Contribution ID: 12

Type: **not specified**

# String theory realisations of early dark energy

*Tuesday, 5 September 2023 15:30 (20 minutes)*

**Presenter:** MAHANTA, Ratul (Bologna University)

**Session Classification:** WG1 (Theory)

Contribution ID: 13

Type: **not specified**

## Axionic Festina Lente

*Tuesday, 5 September 2023 15:50 (20 minutes)*

**Presenter:** VENKEN, Gerben (Heidelberg ITP)

**Session Classification:** WG1 (Theory)

Contribution ID: 14

Type: **not specified**

## Testing BSM Physics with Gravitational Waves

*Tuesday, 5 September 2023 16:10 (20 minutes)*

**Presenter:** VILLA, Gonzalo (DAMTP - University of Cambridge)

**Session Classification:** WG1 (Theory)

Contribution ID: 15

Type: **not specified**

## **Low-scale leptogenesis with low-energy leptonic CP-violation**

*Tuesday, 5 September 2023 16:30 (20 minutes)*

**Presenter:** Dr GRANELLI, Alessandro (Bologna University)

**Session Classification:** WG1 (Theory)



Contribution ID: **16**

Type: **not specified**

## **Axion minivoids**

*Wednesday, 6 September 2023 09:30 (40 minutes)*

**Presenter:** Dr O'HARE, Ciaran (University of Sydney)

**Session Classification:** WG2 (Dark Matter and Cosmology)

Contribution ID: 17

Type: **not specified**

# **Axion Star Explosions and the Reionization History of the Universe**

*Tuesday, 5 September 2023 10:10 (40 minutes)*

**Presenter:** ESCUDERO, Miguel (CERN)

**Session Classification:** WG3 (Astrophysics)

Contribution ID: **18**

Type: **not specified**

## **Formation of ultralight dark matter solar halos**

*Wednesday, 6 September 2023 11:20 (40 minutes)*

**Presenter:** GORGHETTO, Marco (Weizmann Institute)

**Session Classification:** WG2 (Dark Matter and Cosmology)

Contribution ID: **19**

Type: **not specified**

## **Probing ultralight and degenerate dark matter with galactic dynamics**

*Wednesday, 6 September 2023 12:00 (40 minutes)*

**Presenter:** Dr BLAS, Diego (Barcelona, Autonomia Univ.)

**Session Classification:** WG2 (Dark Matter and Cosmology)

Contribution ID: 20

Type: **not specified**

## Cosmological defects

*Wednesday, 6 September 2023 15:30 (20 minutes)*

**Presenter:** Dr BLASI, Simone (Vrije University)

**Session Classification:** WG2 (Dark Matter and Cosmology)

Contribution ID: **21**

Type: **not specified**

## Cosmic strings

*Wednesday, 6 September 2023 15:50 (20 minutes)*

**Presenter:** Dr DREW, Amelia (Cambridge University)

**Session Classification:** WG2 (Dark Matter and Cosmology)

Contribution ID: 22

Type: **not specified**

# Lattice simulations and axion properties: news from TWEXT

*Wednesday, 6 September 2023 16:10 (20 minutes)*

**Presenter:** LOMBARDO, Maria Paola (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** WG2 (Dark Matter and Cosmology)

Contribution ID: 23

Type: **not specified**

## Report on WG2 Activities

*Wednesday, 6 September 2023 14:30 (30 minutes)*

**Presenter:** VITAGLIANO, Edoardo

**Session Classification:** Round Table



Contribution ID: **24**

Type: **not specified**

## Discussion

*Wednesday, 6 September 2023 15:00 (30 minutes)*

**Session Classification:** Round Table

Contribution ID: 25

Type: **not specified**

## **Natural coordinates and consistency conditions for two-field models of inflation in fundamental theories of gravity and matter**

**Presenter:** Prof. LAZAROIU, Calin (National Institute of Physics and Nuclear Engineering, Bucharest)

**Session Classification:** WG1 (Theory)

Contribution ID: 26

Type: **not specified**

## **Inflationary Schwinger dark matter production**

**Presenter:** Dr BASTERO-GIL, Mar (Granada Univ.)

**Session Classification:** WG1 (Theory)

Contribution ID: 27

Type: **not specified**

## Dark photon dark matter from inflation

**Presenter:** UBALDI, Lorenzo

**Session Classification:** WG1 (Theory)

Contribution ID: 28

Type: **not specified**

## **Observation of anomalies supporting the existence of the new particle X17**

*Wednesday, 6 September 2023 15:30 (20 minutes)*

**Presenter:** Dr KRASZNAHORKAY, Attila (CERN)

**Session Classification:** WG4 (Direct searches)

Contribution ID: 29

Type: **not specified**

## Search for ALPS at LHC

*Wednesday, 6 September 2023 15:50 (20 minutes)*

**Presenter:** GALLINARO, Michele

**Session Classification:** WG4 (Direct searches)

Contribution ID: 30

Type: **not specified**

## **Search for topological defect dark matter with a global network of optical magnetometers (GNOME)**

*Wednesday, 6 September 2023 16:10 (20 minutes)*

**Presenter:** GAVILÁN MARTÍN, Daniel (Johannes Gutenberg-University Mainz)

**Session Classification:** WG4 (Direct searches)

Contribution ID: 31

Type: **not specified**

## **Natural coordinates and consistency conditions for two-field models of inflation in fundamental theories of gravity and matter**

*Thursday, 7 September 2023 15:30 (20 minutes)*

**Presenter:** LAZAROIU, Clain (UNED-Madrid and IFIN-HH Bucharest)

**Session Classification:** WG1 (Theory)



Contribution ID: 32

Type: **not specified**

# Inflationary Schwinger dark matter production

*Thursday, 7 September 2023 16:10 (20 minutes)*

**Presenter:** BASTERO-GIL, Mar (Granada Univ.)

**Session Classification:** WG1 (Theory)

Contribution ID: 33

Type: **not specified**

## Dark photon dark matter from inflation

*Thursday, 7 September 2023 15:50 (20 minutes)*

**Presenter:** UBALDI, Lorenzo

**Session Classification:** WG1 (Theory)

Contribution ID: 34

Type: **not specified**

## **Light bosons, superradiance and associated observables**

*Tuesday, 5 September 2023 17:20 (20 minutes)*

**Presenter:** UNAL, Caner (Ben-Gurion)

**Session Classification:** WG3 (Astrophysics)

Contribution ID: 35

Type: **not specified**

# Out of the dark: WISPs in String Theory and the Early Universe

*Thursday, 7 September 2023 09:30 (40 minutes)*

**Presenter:** Prof. CONLON, Joe (Oxford University)

**Session Classification:** WG1 (Theory)

Contribution ID: 36

Type: **not specified**

## Uncovering axion and BSM CP violations with EDMs

*Thursday, 7 September 2023 10:10 (40 minutes)*

**Presenter:** Prof. CHOI, Kiwoon (IBS)

**Session Classification:** WG1 (Theory)

Contribution ID: 37

Type: **not specified**

## Prospects to scrutinise or smash $SM^*A^*S^*H$

*Thursday, 7 September 2023 11:20 (40 minutes)*

**Presenter:** RINGWALD, Andreas (DESY)

**Session Classification:** WG1 (Theory)

Contribution ID: **38**

Type: **not specified**

## **Flavour in ALP effective field theories**

*Thursday, 7 September 2023 12:00 (40 minutes)*

**Presenter:** RENNER, Sophie (University of Glasgow)

**Session Classification:** WG1 (Theory)

Contribution ID: 39

Type: **not specified**

## Report on WG1 Activities

*Thursday, 7 September 2023 14:30 (30 minutes)*

**Presenter:** CICOLI, Michele (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Round Table



Contribution ID: **40**

Type: **not specified**

## Discussion

*Thursday, 7 September 2023 15:00 (30 minutes)*

**Session Classification:** Round Table

Contribution ID: 42

Type: **not specified**

## **High energy resolution x-ray detectors for IAXO: advantages in pre- and post-discovery phases**

*Thursday, 7 September 2023 16:10 (20 minutes)*

**Presenter:** GASTALDO, Loredana (Kirchhoff Institute for Physics, Heidelberg University)

**Session Classification:** WG4 (Direct searches)

Contribution ID: 43

Type: **not specified**

## **Probing the Dark Sector with NA64 and POKER at CERN SPS**

*Thursday, 7 September 2023 15:30 (20 minutes)*

**Presenter:** MARSICANO, Luca (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** WG4 (Direct searches)

Contribution ID: 44

Type: **not specified**

## Axion searches at DESY

*Friday, 8 September 2023 09:00 (40 minutes)*

**Presenter:** Dr KOZLOWSKI, Todd (DESY)

**Session Classification:** WG4 (Direct searches)

Contribution ID: 45

Type: **not specified**

## **CAST and more than CAST; A Dark Sector Probe for 20+ Years**

*Friday, 8 September 2023 09:40 (40 minutes)*

**Presenter:** Prof. CETIN, Serkant (Istinye University, Istanbul, Turkiye)

**Session Classification:** WG4 (Direct searches)

Contribution ID: 46

Type: **not specified**

## **Searching for new light particles with PADME and fixed target experiments**

*Friday, 8 September 2023 10:50 (40 minutes)*

**Presenter:** KOZHUHAROV, Venelin (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** WG4 (Direct searches)

Contribution ID: 47

Type: **not specified**

## Status of the VMB@CERN experiment

*Friday, 8 September 2023 11:30 (40 minutes)*

**Presenter:** KUNC, Stepan (TUL Liberec)

**Session Classification:** WG4 (Direct searches)

Contribution ID: 48

Type: **not specified**

## Report on WG4 activities

*Friday, 8 September 2023 12:10 (30 minutes)*

**Presenter:** KARUZA, Marin (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Round Table



Contribution ID: 49

Type: **not specified**

## Discussion

*Friday, 8 September 2023 12:40 (30 minutes)*

**Session Classification:** Round Table

Contribution ID: 50

Type: **not specified**

## Conclusions

**Presenter:** MIRIZZI, Alessandro (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Summary Session

Contribution ID: 51

Type: **not specified**

## Conclusions

*Friday, 8 September 2023 13:10 (20 minutes)*

**Presenter:** MIRIZZI, Alessandro (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Conclusions

Contribution ID: 52

Type: **not specified**

## **Alla scoperta dell'universo invisibile: materia oscura, onde gravitazionali e buchi neri**

*Thursday, 7 September 2023 18:00 (1 hour)*

**Presenter:** CAPUTO, Andrea

**Session Classification:** WG5 (Dissemination and Outreach)

Contribution ID: 53

Type: **not specified**

## **Birefringence in CMB anisotropies due to cosmological pseudoscalar fields**

*Tuesday, 5 September 2023 17:40 (20 minutes)*

**Presenter:** GALAVERNI, Matteo (Vatican Observatory & INAF/OAS Bologna)

**Session Classification:** WG3 (Astrophysics)

Contribution ID: 54

Type: **not specified**

## Photon to axion conversion during Big Bang Nucleosynthesis

*Tuesday, 5 September 2023 18:00 (20 minutes)*

**Presenter:** MASIP, Manuel (University of Granada)

**Session Classification:** WG3 (Astrophysics)

Contribution ID: 55

Type: **not specified**

## Search for WISPs with gravitational-wave detectors

*Thursday, 7 September 2023 15:50 (20 minutes)*

**Presenter:** PIERINI, Lorenzo (INFN Roma)

**Session Classification:** WG4 (Direct searches)

Contribution ID: 56

Type: **not specified**

## WG 1 report

*Friday, 8 September 2023 14:50 (20 minutes)*

**Presenter:** BRIVIO, Ilaria

**Session Classification:** Management Committee Meeting



Contribution ID: 57

Type: **not specified**

## WG2 report

*Friday, 8 September 2023 15:10 (20 minutes)*

**Presenter:** VITAGLIANO, Edoardo

**Session Classification:** Management Committee Meeting

Contribution ID: 58

Type: **not specified**

## WG3 report

*Friday, 8 September 2023 15:30 (20 minutes)*

**Presenter:** CAPUTO, Andrea

**Session Classification:** Management Committee Meeting

Contribution ID: 59

Type: **not specified**

## WG 4 report

*Friday, 8 September 2023 15:50 (20 minutes)*

**Presenter:** KARUZA, Marin (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Management Committee Meeting

Contribution ID: **60**

Type: **not specified**

## WG5 report

*Friday, 8 September 2023 16:10 (20 minutes)*

**Presenter:** GASTALDO, Loredana (Kirchhoff Institute for Physics, Heidelberg University)

**Session Classification:** Management Committee Meeting

Contribution ID: **61**

Type: **not specified**

## ECI Committee Report

*Friday, 8 September 2023 16:50 (15 minutes)*

**Presenter:** CARENZA, Pierluca

**Session Classification:** Management Committee Meeting

Contribution ID: **62**

Type: **not specified**

## **CA21106 Introduction**

*Friday, 8 September 2023 14:30 (20 minutes)*

**Presenter:** MIRIZZI, Alessandro (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Management Committee Meeting

Contribution ID: 63

Type: **not specified**

## Grant Awarding Coordinator report

*Friday, 8 September 2023 17:05 (15 minutes)*

**Presenter:** KOZHUHAROV, Venelin (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Management Committee Meeting

Contribution ID: 64

Type: **not specified**

## Report from Gender and Diversity Advisor

*Friday, 8 September 2023 17:20 (20 minutes)*

**Presenter:** Prof. SUNAR CERCI, Deniz

**Session Classification:** Management Committee Meeting



Contribution ID: 65

Type: **not specified**

## Draft of W&B Plan 2024

*Friday, 8 September 2023 17:40 (1 hour)*

**Presenter:** MIRIZZI, Alessandro (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Management Committee Meeting

Contribution ID: 66

Type: **not specified**

## Report on WG5 activities and discussion

*Thursday, 7 September 2023 17:00 (45 minutes)*

**Presenter:** GASTALDO, Loredana

**Session Classification:** WG5 (Dissemination and Outreach)