

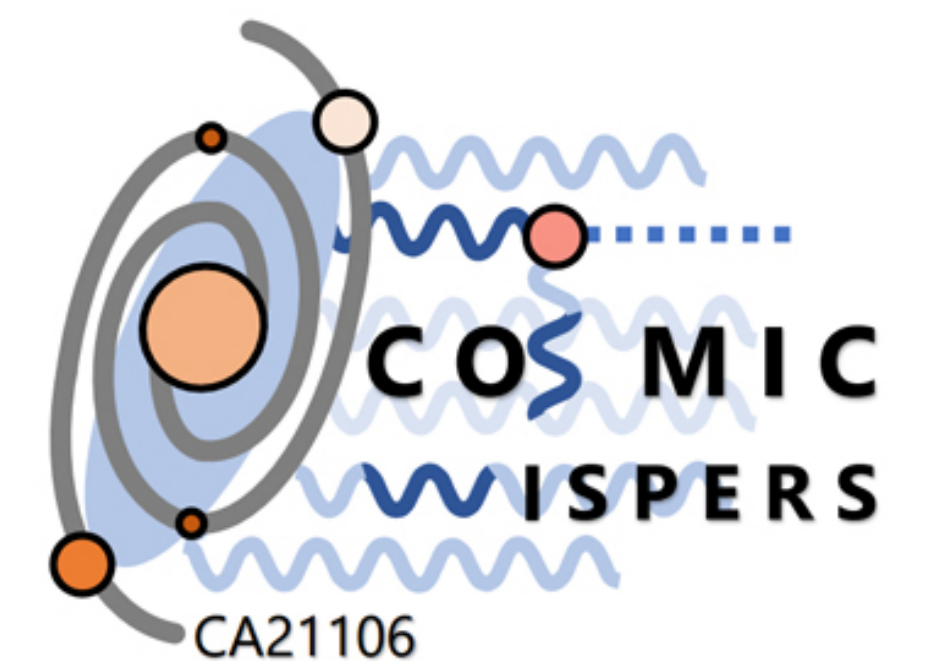
ECI Committee Report

2nd General Meeting of COST Action COSMIC WISPerS (CA21106)

Arturo de Giorgi

Young Researchers Council Representative

06.09.2024 - Istinye University, Istanbul (TR)

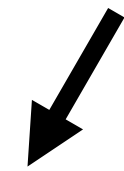


Young Researchers Council

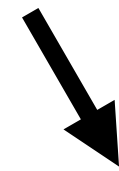
Current Activities

Monthly Colloquia

- Speakers **within/out** the Action
- **Alternating** all **WG** groups



give visibility to our members



introduce the Action to potential new members



Giuseppe Lucente



Arturo de Giorgi



Mario Reig Lopez



Marta Fuentes Zamoro

The corkboard displays five colloquium posters, each featuring a speaker's photo, title, abstract, and date. The posters are as follows:

- Poster 1:** Title: "Revealing Structure in the Axiverse". Speaker: LIAM MCALLISTER (Cornell University, USA). Date: 29 March 2023, 3.30 pm (CET). Abstract: "I will describe progress in understanding the axions that arise in string theory. Advances in computational geometry have allowed us to construct, for the first time, theories of hundreds of axions in explicit compactifications of string theory. We find patterns therein that differ strongly from what one finds in the literature that extrapolates from simple geometries supporting small numbers of axions. I will discuss implications for the strong CP problem, black hole superradiance, and axion-photon couplings."
- Poster 2:** Title: "Neutron stars as axion laboratories". Speaker: SAMUEL WITTE (Amsterdam University, Netherlands). Date: 17 April 2023, 3.30 pm (CEST). Abstract: "In this talk I will discuss a series of novel ideas and searches being developed to indirectly look for the existence of axions in the magnetospheres of neutron stars. The large magnetic fields and the dense plasma surrounding neutron stars can dramatically enhance the electromagnetic interactions of axions, giving rise to a variety of signatures in the radio band, including: narrow spectral lines centered about the axion mass, broadband radio emission, short-term and longer-term transient events, and nulling of the pulsar's radio emission. I will highlight the status of current searches, future prospects, and open questions that need to be addressed as we move toward the next generation of radio telescopes."
- Poster 3:** Title: "Small Kinetic Mixing from String Theory". Speaker: ARTHUR HEBECKER (Heidelberg University, Germany). Date: 30 May 2024, 2.00 pm (CEST). Abstract: "I will start by recalling some basics of kinetic mixing between the Standard Model and a hidden-sector U(1). Experimentally, there exist strong constraints making the case of an extremely small mixing parameter most interesting. By contrast, Swampland arguments and the most naive field-theoretic expectations suggest that order-one mixing is generic. I will argue that, nevertheless, simple string-theoretic constructions can very naturally lead to extremely small mixing between the visible and hidden U(1) due to sequestering in large compact dimensions."
- Poster 4:** Title: "In search for ultralight (pseudo)scalars and other dark matter wannabes". Speaker: DMITRY BUDKER (JGU Mainz & UC Berkeley). Date: 21 June 2023, 2.30 pm (CEST). Abstract: "The list of interesting dark matter (DM) candidates is not getting any shorter. It includes, among others, ultralight bosonic fields, millicharged particles, axion-quark nuggets and other objects with widely diverging properties. We will discuss some of the recently employed or proposed techniques to look for these using atomic and molecular spectroscopy, clocks, magnetometers, ion traps, gravimeters, and sensor networks. We will mention both direct-detection strategies and 'sneaky' ways to look for DM candidates via the 'fifth-force' interactions between standard-model fermions."
- Poster 5:** Title: "Axion searches with gamma-ray telescopes". Speaker: MANUEL MEYER (CP3-Origins, University of Southern Denmark). Date: 25 June 2024, 3.00 pm (CEST). Abstract: "Axions and axion-like particles are well motivated candidates for physics beyond the standard model that could possibly explain the nature of dark matter. They are predicted to oscillate into photons in the presence of external magnetic fields. For typical magnetic fields encountered in galaxies and galaxy clusters, the oscillation probability becomes maximal for axion-like particle masses above ~1 nano electron volt at gamma-ray energies. Signatures of axion-like particles at these energies include a reduced opacity of the Universe for gamma-ray photons, spectral oscillations, as well as gamma-ray bursts from supernova explosions (and possibly binary neutron star mergers). In this talk, I will review how we use present and future gamma-ray telescopes to search for these observables."

Journal Clubs

Month	Date	Meeting Name	Host
June 2024	04 Jun	JC June	Margherita Putti
May 2024	09 May	JC May	Jamie Mcdonald
March 2024	05 Mar	JC March	Kristjan Mürsepp
February 2024	08 Feb	JC February	Daniel Gavilan-Martin
December 2023	05 Dec	JC December	Damiano Fiorillo
November 2023	07 Nov	JC November	Junu Jeong
October 2023	10 Oct	JC October	Antonio Gomez



Michele Tammaro



Maria Benito

- **Monthly** meeting
- **Papers** from the **arXiv**
- **Papers** from **our members**

Newsletter

- Cosmic Wispers **preprints**
- COST opening of **calls**
- **Conferences**
- PhD/Postdoc/Junior **Positions**



Damiano Fiorillo



Alessandro Lella

Please email them with new preprints!

Social Media: X

CA 21106 COSMIC WISPerS


Cosmic Wispers
@CosmicWispers

Iscrizione: settembre 2022

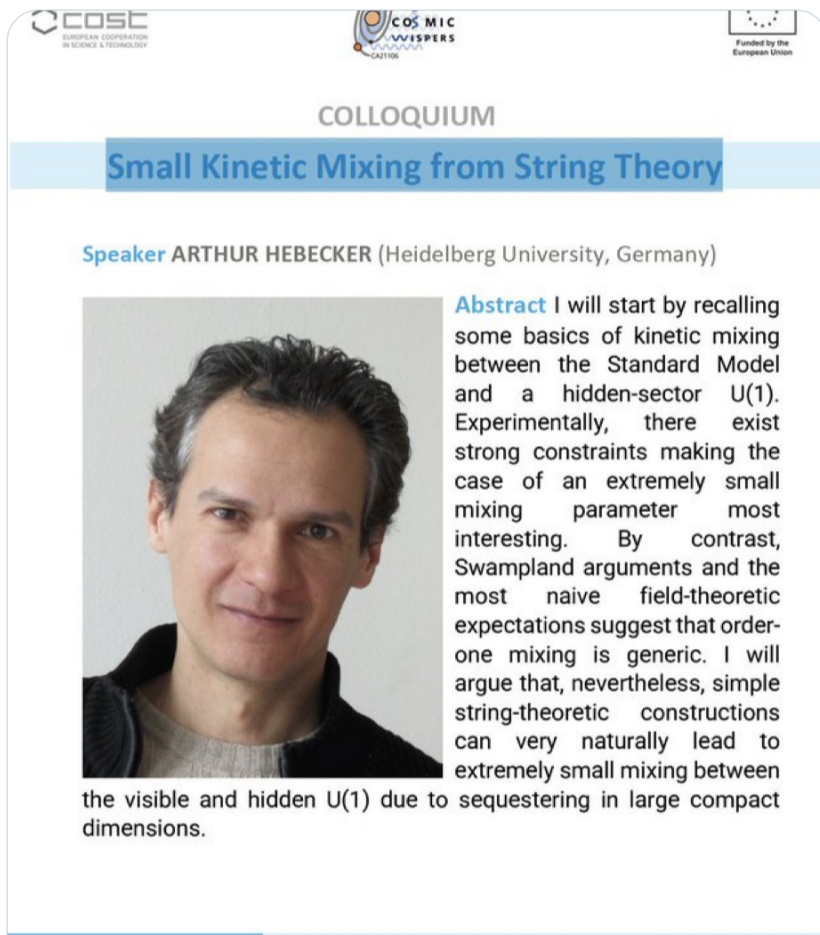
140 Following 86 Follower

Post Risposte Contenuti

Cosmic Wispers @CosmicWisp... · 15/6/24 ...
M. Kaltschmidt (Zaragoza Univ.),
A. Lella (Bari Univ.),
L. Roberts (Max Planck Institute for Gravitation al Physics) got the COSMIC WISPerS Prize 2024 for the three best students talks in the 2nd CA21106 Training School in Ljubljana. Congratulations!




Cosmic Wispers @CosmicWisp... · 30/5/24 ...
COLLOQUIUM DAY! Today, Arthur Hebecker (Heidelberg University) will talk about "Small Kinetic Mixing from String Theory". Join the talk at 2 pm (CEST) at stockholmuniversity.zoom.us/j/2461001998



COLLOQUIUM
Small Kinetic Mixing from String Theory

Speaker ARTHUR HEBECKER (Heidelberg University, Germany)




Abstract I will start by recalling some basics of kinetic mixing between the Standard Model and a hidden-sector $U(1)$. Experimentally, there exist strong constraints making the case of an extremely small mixing parameter most interesting. By contrast, Swampland arguments and the most naive field-theoretic expectations suggest that order-one mixing is generic. I will argue that, nevertheless, simple string-theoretic constructions can very naturally lead to extremely small mixing between the visible and hidden $U(1)$ due to sequestering in large compact dimensions.

30 MAY 2024 2.00 pm (CEST)

Zoom link: <https://stockholmuniversity.zoom.us/j/2461001998>

Cosmic Wispers @CosmicWisp... · 17/10/23 ...
Cosmic WISPerS member Federico Urban and his team have just been awarded a Czech Inter-COST grant to work on spin-2 WISPerS over the next two years.



1 98

[Mostra questa discussione](#)

Cosmic Wispers @CosmicWisp... · 17/10/23 ...
The focus of the project will be to understand if and how current astrophysical/ cosmological WISPerS production mechanisms and WISPerS laboratory detection techniques can be adapted for spin-2 WISPerS, what new techniques could be used to search specifically for spin-2 WISPerS,



Maria Benito



Ophir Ruimi

Future Activities

ECIs Communication Channel

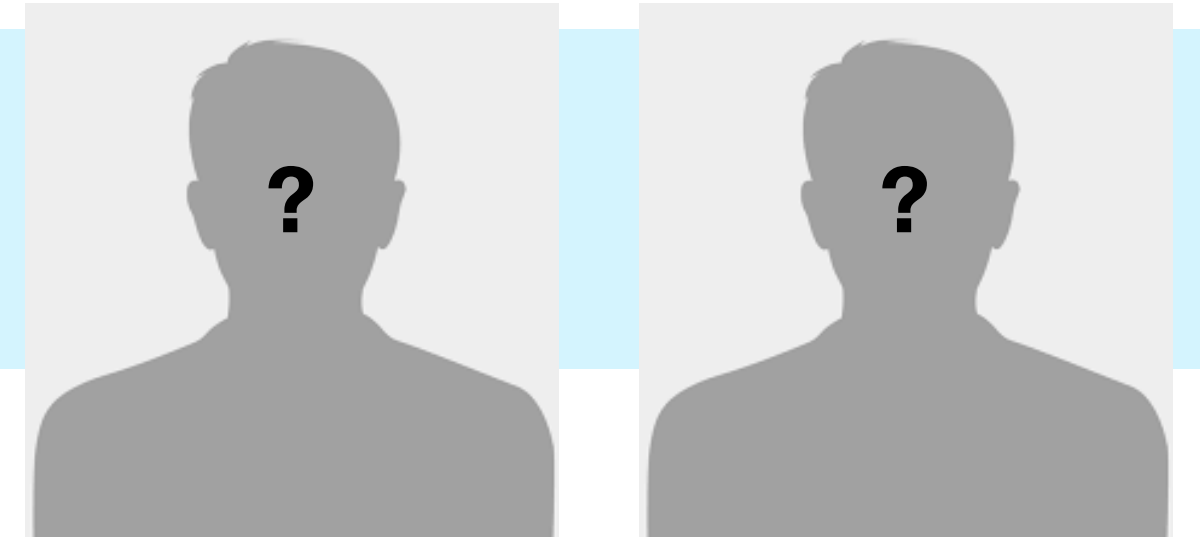
- **Faster** and **informal** communication
- Beneficial for **organisational** purposes



- **Free, groups and channels**
- **Large number of members**

Whispered Tutorials

"We are a community of experts, so why shouldn't we learn from each other?"



- **New initiative** where ECIs and senior members **share** their **expertise** on specific topics
- **Basic** but **practical examples: calculations** and **“how to”**
- Aimed to ECIs but open to everyone

The **first tutorial** (“The QCD Axion Potential” by Cem Eröncel) was tested before summer-break

Well received, ~ same number of participants as in the Colloquia

Organization 2025

Training School
General Meeting

Just ask!

Monthly Colloquia

Journal Clubs

Newsletter

Social Media: X

ECIs Communication Channel

Whispered Tutorials

Organization 2025

Thanks!

Arturo de Giorgi
Young Researchers Council Representative

