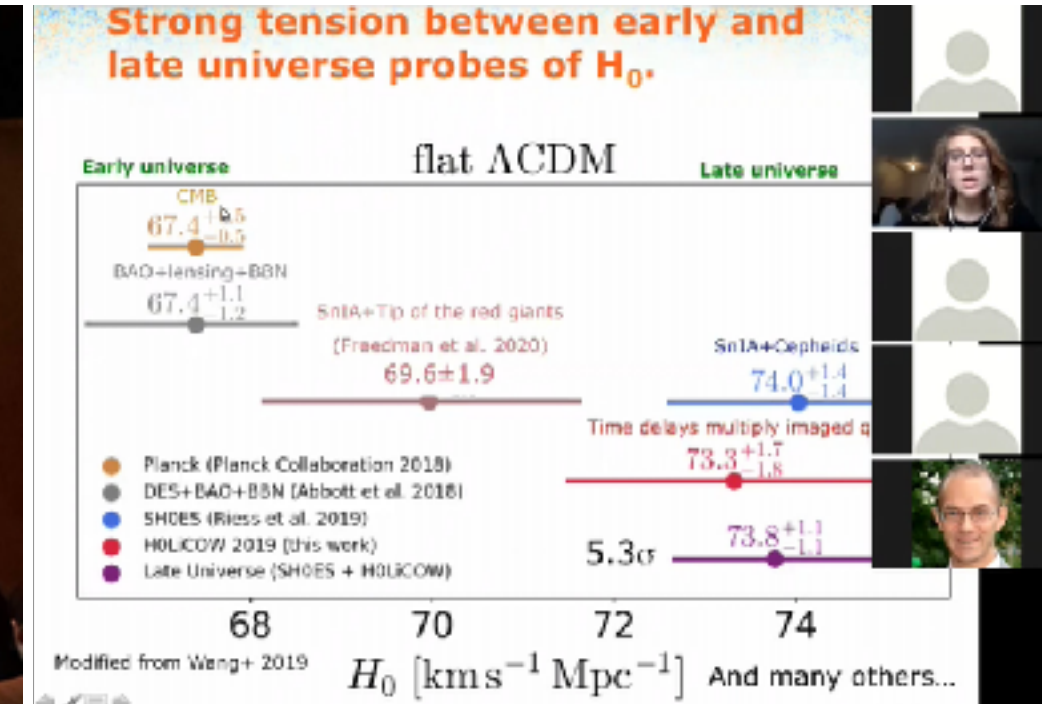
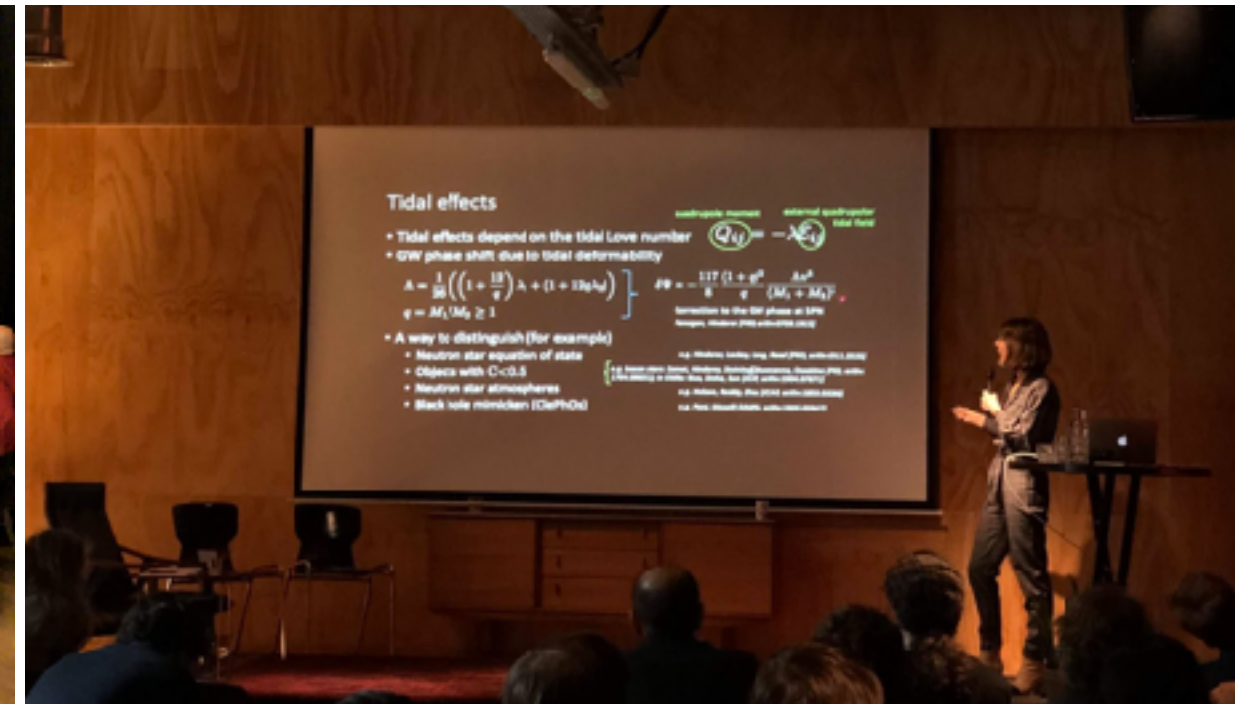




# EuCAPT

## European Consortium for Astroparticle Theory



Gianfranco Bertone, 29/6/2023



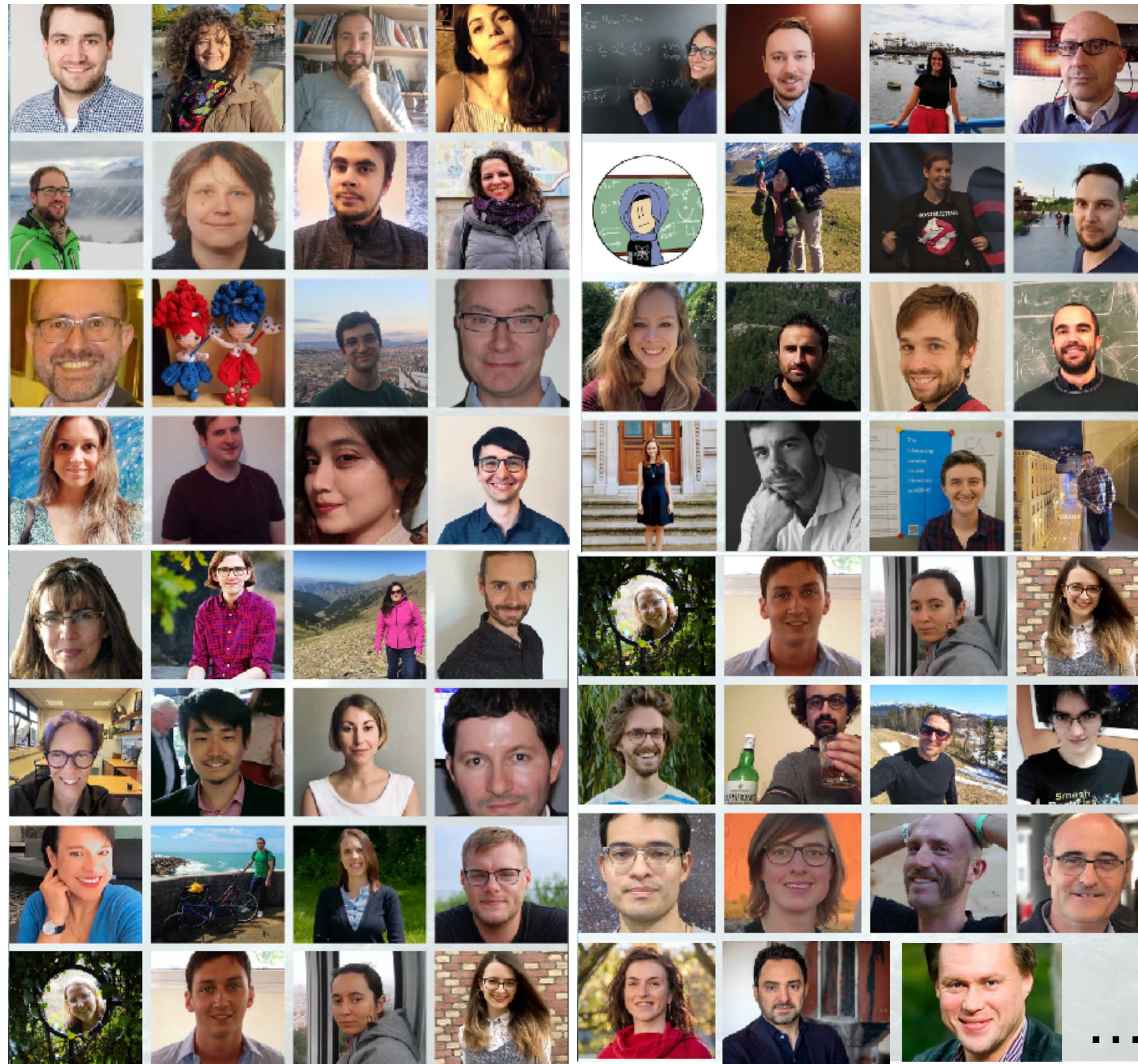
# EuCAPT in 2023



- Launched in 2019
- Central hub at CERN
- Grown in 4 years to:
  - **133** Institutions
  - **1688** individual members
- Represented by:
  - **70** Council Members
  - **11** Steering Committee members



# Who are we?



- 1688 individual members
- A vibrant, diverse community:
  - **Video profile series:** recorded Zoom interviews with members of the community, covering research and life in academia
  - **Blog profiles series:** short, written interviews with members of the community



# EuCAPT Council



- First meeting 4 Oct 2022
- Second meeting 30 May 2023













António Pestana Morais  
Enrico Pajer  
Jackson Levi Said  
Pedro G. Ferreira  
Alberto Mariotti  
Francesca Calore  
Alejandro Ibarra  
Paul Saffin  
Irene Tamborra  
Valerie Domcke  
Volodymyr Pelykh  
Silvia Pascoli  
Gert Hütsi  
Pedro Schwaller  
Ely Kovetz  
Giuseppe Fannizza  
Jorge Martin Camalich  
Riotto Antonio  
Katy Clough  
Laura Sagunski  
Pierre Vanhove  
José Ignacio Illana  
Paolo PANCI  
Foteini Oikonomou  
Carmelo Evoli  
Harry Desmond  
David J. E. Marsh (Doddy)  
Laura Bernard  
David Langlois  
Jose Alberto Ruiz Cembranos  
Gabriela Barenboim  
Riccardo Catena  
Ivonne Zavala  
Alessio Notari

Alvise Raccanelli  
Bradley J Kavanagh  
Sami Nurmi  
Jessica Turner  
John Antoniadis  
José Manuel Carmona  
Masina Isabella  
Isabella Masina  
Alessandra Silvestri  
Marco Taoso  
Federico Urban  
Isabella Masina  
Walter Winter  
Christoph Weniger  
Isabella Masina  
Sébastien Renaux-Petel  
Philipp Mertsch  
Ricardo Z. Ferreira  
Matteo R. Fasiello  
Masha Chernyakova  
Arttu Rajantie  
Marina Migliaccio  
Ilidio Lopes  
Tim Linden  
Paolo Pani  
Fabio Iocco  
Davide Gerosa  
Emanuela Dimastrogiovanni  
Alain Blanchard  
Josef Pradler  
Gabrijela Zaharijas  
Željka Marija Bošnjak  
Julia Becker Tjus  
Stefano Liberati  
Geraint Pratten



# Steering Committee



 Ema Dimastrogiovanni <b>Training</b>	 Silvia Pascoli <b>Outreach</b>	 Anne Green <b>Colloquia</b>	 Matteo Fasiello <b>Workshops</b>	 Francesca Calore <b>Governance/ Elections</b>	 Gabriela Barenboim <b>Funding Opportunities</b>
 Andrew Taylor <b>Newsletter</b>	 David Marsh <b>Website</b>	 Valerie Domcke <b>Symposium</b>	 Jessica Turner <b>EDI/ Community building</b>	 Alvise Raccanelli <b>Collaborative Projects</b>	 Gianfranco Bertone <b>Director</b>

*Junior Contributor:*



Niko Šarčević

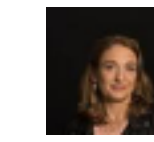
*Former members:*



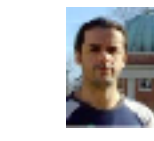
Piero Ullio



Philippe Brax



Licia Verde



Vitor Cardoso



Gian Giudice



Toni Riotto



David Langlois



Subir Sarkar



# Selected highlights

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- Community-wide **White Paper** “Opportunities and Challenges for Theoretical Astroparticle Physics in the Next Decade” (arXiv:2110.10074) 135 authors, 400 endorsers
- **Community building:**
  - Website
  - Monthly Newsletter
  - Mailing list (1655 colleagues)
  - Code repository HEP + Astro + Cosmo
- Funded first **exchange program** in 2022:
  - 4 collaboration meetings at CERN
  - 13 individual visits to other EuCAPT institutions
- **Events** organised:
  - 3 Annual Symposia
  - 6 Workshops
  - 15 Colloquia
  - This year: EuCAPT BIP Erasmus+ School



# What's next?

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- How can we enable/accelerate new discoveries?
- How can we attract new resources?
- How can we best serve our growing and increasingly diverse community?
- How can we improve the public understanding of Cosmology and Astroparticle Physics?
- What are the questions that we are not even asking yet?
- ...



# Funding Opportunities and Training Task Forces

## Funding Opportunities

Gabriela Barenboim (chair)      gabriela.barenboim@uv.es

Gabrijela Zaharijas      gzaharijas@ung.si

Foteini Oikonomou      foteini.oikonomou@ntnu.no

Ivonne Zavala      e.i.zavalacarrasco@swansea.ac.uk

Davide Gerosa      davide.gerosa@gmail.com

Paolo Panci      paolo.panci@cern.ch

## Training



**Marina Migliaccio**  
Department of Physics  
University of Roma Tor  
Vergata/INFN

**Harry Desmond**  
Institute of Cosmology and  
Gravitation  
University of Portsmouth



**Christoph Weniger**  
GRAPPA  
University of Amsterdam

**Ema Dimastrogiovanni**  
Van Swinderen Institute  
University of Groningen



**FIRST EUCAPT SCHOOL: COSMOLOGY**  
Valencia, 18-22 September 2023

This is the website of the **First EuCAPT School on Cosmology**.



The School is designed for Master and PhD Students working in the areas of cosmology and astroparticle physics and combines a scientific with a «soft skills» training program. Science lectures will be delivered by world experts from different European Universities and research centres.

Lecturers:

- **Carlo Contaldi**, Imperial College London
- **Daniel G. Figueroa**, Instituto de Física Corpuscular (CSIC – University of Valencia)
- **Mark Hindmarsh**, Helsinki University and Sussex University
- **Alessandra Silvestri**, University of Leiden
- **Gianmassimo Tasinato**, Bologna University and Swansea University
- **Andrew Tolley**, Imperial College London
- **David Wands**, Institute of Cosmology and Gravitation, University of Portsmouth

The school will have no registration fee and will amount to a study load of 3 ECTS.

Registration: [INDICO](#).



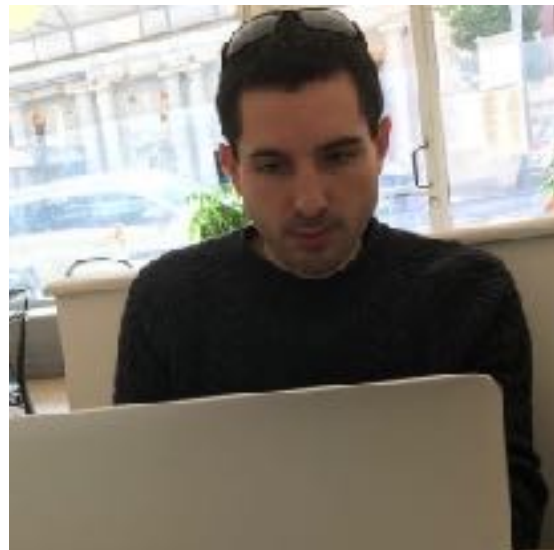
forthem.      Erasmus+      IFIC      CSIC



# Community Building Task Force



- Jessica Turner (University of Durham) :  
[jessica.turner@durham.ac.uk](mailto:jessica.turner@durham.ac.uk)



- Tim Linden (Stockholm University):  
[linden@fysik.su.se](mailto:linden@fysik.su.se)



- Laura Bernard (Paris Observatory) :  
[laura.bernard@obspm.fr](mailto:laura.bernard@obspm.fr)



- Irene Tamborra (Niels Bohr Institute)  
: [tamborra@nbi.ku.dk](mailto:tamborra@nbi.ku.dk)

- **In progress or done :**
  - update the EuCAPT Code of Conduct (<https://www.eucapt.org/coc>)
  - suggest speakers on EDI for the EuCAPT colloquium, workshops and schools
- **Planned :**
  - analyse the census data about the diversity of the EuCAPT community
  - act as ombudsperson for EuCAPT - contact (to be set up)



# Symposium Task Force

3rd EuCAPT Symposium at CERN, May 31 to June 2, 2023





# 3rd EuCAPT Symposium at CERN, May 31 to June 2, 2023

## Lightning Talks

 30 Lightning Talks presented

Recent constraints on the primordial spectrum from CMB lensing and the CMB anisotropies Giuseppe Francigione	Impact of Neutrino Delay on the Cosmic Neutrino Background LORIANO JACOBI / ANTONIO LOTO
Gravity as Portal to Relativity, Lorentzness and Dark Matter DANIEL JONES - Main Auditorium, CERN	A First Look at Sky Anisotropies of High-Energy Neutrino Fluxes BENJAMIN DELGADO
The Cosmological FIM: A Systematic Approach to Hierarchical Clusters DANIEL JONES	Dark Satellites and Millisecond Pulsar Energy Emission JAMES HUGHES-JONES
Real scale gauge fluctuations, bubble nucleation, nonperturbativity DANIEL JONES - Main Auditorium, CERN	Super-Plasma Instability Resolves GeV TeV Terahertz and Correlated Light Anisotropy OLEG CHIBIKOV
Resistive effects during inflation DANIEL JONES - Main Auditorium, CERN	The origin of $\nu$ MSW effects from the strengths with IceCube ANITA BUSTICO-VALDES
Renormalization dynamics of dark sectors DANIEL JONES - Main Auditorium, CERN	DM production and their detectability in the next years TOMAS DE DOMINICIS
Compositeness, Res. fields from nearly linear chiral fermions for dark matter annihilating into long-lived mediators FRANCESCO FERRARI	Probing Neutrinos through Tomography of Anisotropic Geometric Diffraction ALESSANDRO GROSSI
Neutralino annihilation cross-sections at dark matter relic density in $\mu$ -EFT models using quantum entanglement ALESSANDRO GROSSI	Extracting Cluster Information from small scale CMB JAMES JONES
Dark Matter Production in the Diffuse Supernova Neutrino Background DANIEL JONES - Main Auditorium, CERN	Modeling of Astrophysical Systems for Cosmology with LSST MARTIN JONES
Constraining Neutrino in Fuzzy Dark Matter Cosmologies DANIEL JONES - Main Auditorium, CERN	Reliable and resource preserving simulator for Bayesian model inference DANIEL JONES
A Bayesian estimation of the Milky Way's Circular Velocity Curve using Gaia DR2 DANIEL JONES - Main Auditorium, CERN	Antineutrino galaxy cross-correlations DANIEL JONES
Seeking Dark Signatures for Indirect Detection from Bound State Formation of Electroweak Multiplets GIORGIO ALBERTI	The Dipole of the Neutrino DM Halo FRANCESCO FERRELLI
Tuning Grand Unified Theories with gravitational waves and probe decay DANIEL JONES - Main Auditorium, CERN	
A new universal property of cosmological gravitational wave anisotropy DANIEL JONES - Main Auditorium, CERN	
Searching for Primordial Black Holes with the Event Horizon Telescope DANIEL JONES - Main Auditorium, CERN	
The impact of gravitational wave memory in constraining binary black hole parameters DANIEL JONES - Main Auditorium, CERN	
BBHs in the dark gravitational wave background from pulsar SCOs in spin interferometers DANIEL JONES - Main Auditorium, CERN	
Conceptual History of the BICEP DANIEL JONES - Main Auditorium, CERN	

## Posters

 45 posters presented, online + in person



(a subset taken from mattermost)

<https://indico.cern.ch/event/1218730/>



# Website Task Force



Katy Clough //  
QMUL  
k.clough@qmul.ac.uk

David Marsh //  
Stockholm University  
david.marsh@fysik.su.se



Bradley Kavanagh //  
IFCA  
kavanagh@ifca.unican.es

Niko Šarčević //  
Newcastle University  
n.sarcevic2@newcastle.ac.uk



## In progress or done:

- General info
- Joining EuCAPT
- Resources
- Events/News
- Blog
- Video profiles
- Events

## Plans:

- Evolve with the organization
- Synchronize with other task forces
- Increase social media presence
- Community insight and suggestions



# Outreach Task Force

Silvia Pascoli, University of Bologna, INFN

Jorge Martin Camalich, IAC,  
University of La Laguna

Jose Ignacio Illana Calero, U. of Granada

Pierre Vanhove ,IPT CEA-Saclay

Isabella Masina, U. of Ferrara, INFN

Alessio Notari, U. of Barcelona

Jose Manuel Carmona, U. of Zaragoza



- **Phase I: collect information about what the community does and needs emerge.**
  - We will send out a survey to capture a picture of the activities carried out by the community, especially to highlight innovative initiatives.
- **Phase II: proactively initiate new outreach activities of broad scope in theoretical astroparticle physics**
  - (e.g. Twitter further developing current activity, Instagram, youtube channel for talks, prizes for outreach)..



# Cosmos Prize

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- **2 prizes** for best pop science book awarded every year: 1 from scientists, 1 from high school students
- **Very successful** in Italy
  - Top scientists & communicators involved (Jim Al Khalili, Brian Greene, Sean Carroll, David Spiegelhalter)
  - Thousands of students involved
- Open to all, focus on youth from **disadvantaged backgrounds**
- In **collaboration** with Education Ministry, Publishers, Schools, National agencies

Already established in Italy and NL, ongoing discussions with colleagues in France, UK, Sweden, Spain...



# Governance Task Force

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- **Francesca Calore,**
  - Laboratoire d'Annecy de Physique Théorique (FR)
  - [calore@lapth.cnrs.fr](mailto:calore@lapth.cnrs.fr)
- **Ricardo Z. Ferreira,**
  - Institut de Física d'Altes Energies (ES)
  - [rzambujal@ifae.es](mailto:rzambujal@ifae.es)
- **David Langlois**
  - Laboratoire Astroparticules & Cosmologie (FR)
  - [langlois@APC.UNIV-PARIS7.FR](mailto:langlois@APC.UNIV-PARIS7.FR)
- **Arttu K. Rajantie**
  - Imperial College London (UK)
  - [a.rajantie@imperial.ac.uk](mailto:a.rajantie@imperial.ac.uk)

## Top priorities:

- Prepare elections for new EuCAPT director [Done]
- Prepare next Council Chair election [Done]
- Maintain official EuCAPT governance document updated [In progress]
- Revise membership and representation rules [In progress]
- Invite missing institutions to join + reopen membership applications [In progress]



# Looking for a new director

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- After ~5 years I will step down as director in Jan 2024
- We seek a new director who can lead EuCAPT for the next 2.5-5 years
- This is an *amazing* opportunity:
  - Professional growth: leadership of large European network
  - Coordinate a diverse community of highly skilled and motivated people
  - Make/catalyse long lasting contributions to our scientific field
- What is your vision?
- Council collecting nominations now! (more later)



# EuCAPT's director

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The main tasks of the Director are:

- To **chair the Steering Committee**;
- To **coordinate and supervise** the whole range of EuCAPT activities;
- To keep in close **contact with the authorities of the central hub** host about the provided support and services and the activities of the secretarial support staff;
- To **prepare annual plans and annual reports**, including an overview of the activities and a financial report.
- To **report twice a year** to the APPEC GA about the activities of EuCAPT. The Director has a standing invitation to the APPEC GA meetings;
- To actively seek opportunities to **support community building activities**;
- To **coordinate the application for funding instruments** to support scientific meetings and staff exchanges;
- To **stimulate and coordinate actions which demand a prompt reaction** (for instance new physics results, requests from APPEC-SAC or requests of visits/short workshops/meeting which are not part of the annually planned activities of EuCAPT);
- The EuCAPT Director can **create new task forces** for specific actions mentioned above.