



# EuCAPT

## European Consortium for Astroparticle Theory



Gianfranco Bertone, 5/6/2020

# EuCAPT mission



- EuCAPT aims
  - to bring together the European community of theoretical astroparticle physicists and cosmologists.
  - to increase the exchange of ideas and knowledge;
  - to coordinate scientific and training activities
  - to help scientists attract adequate resources for their projects
  - to promote a stimulating, fair and open environment in which young scientists can thrive



EuCAPT kick-off meeting , July 10, 2019. Agreement signed by CERN and APPEC for a new research centre for astroparticle physics theory. CERN selected as central hub for 5 years.

# Steering committee

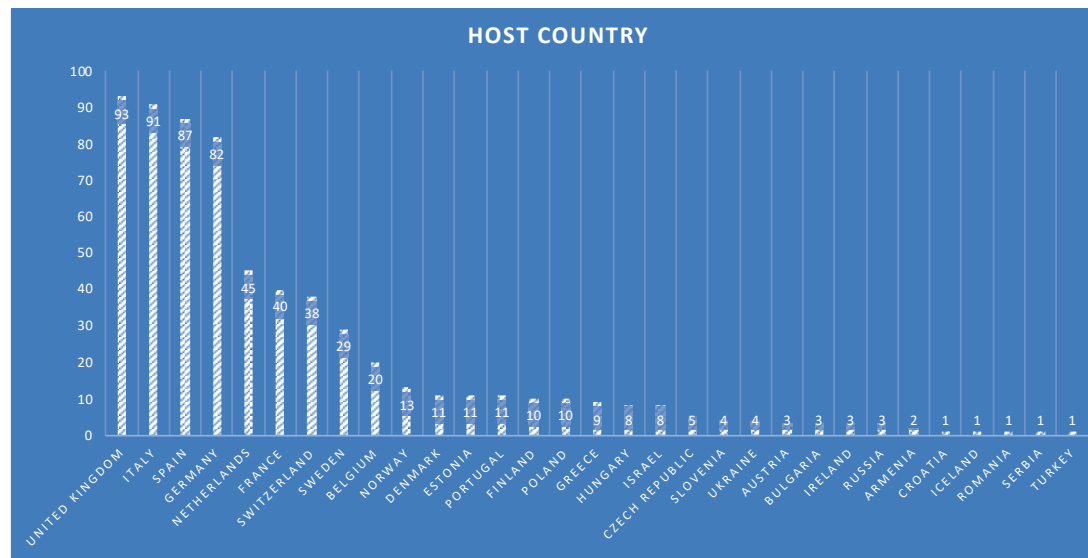
- Gianfranco Bertone (director), GRAPPA/Nikhef Amsterdam, NL
- Philippe Brax, Paris-Saclay, France
- Vitor Cardoso, IST Lisbon, Portugal
- Gian Giudice, CERN Theory Department, Geneva, Switzerland
- David Langlois, APC Paris, France
- David Marsh, Stockholm University, Sweden
- Silvia Pascoli, IPPP, Durham, United Kingdom
- Antonio Riotto, Université de Genève, Switzerland
- Subir Sarkar, Oxford University, United Kingdom
- Andrew Taylor, DESY, Germany
- Piero Ullio, IFPU Trieste, Italy
- Licia Verde, ICC Barcelona, Spain



# Census — Host country



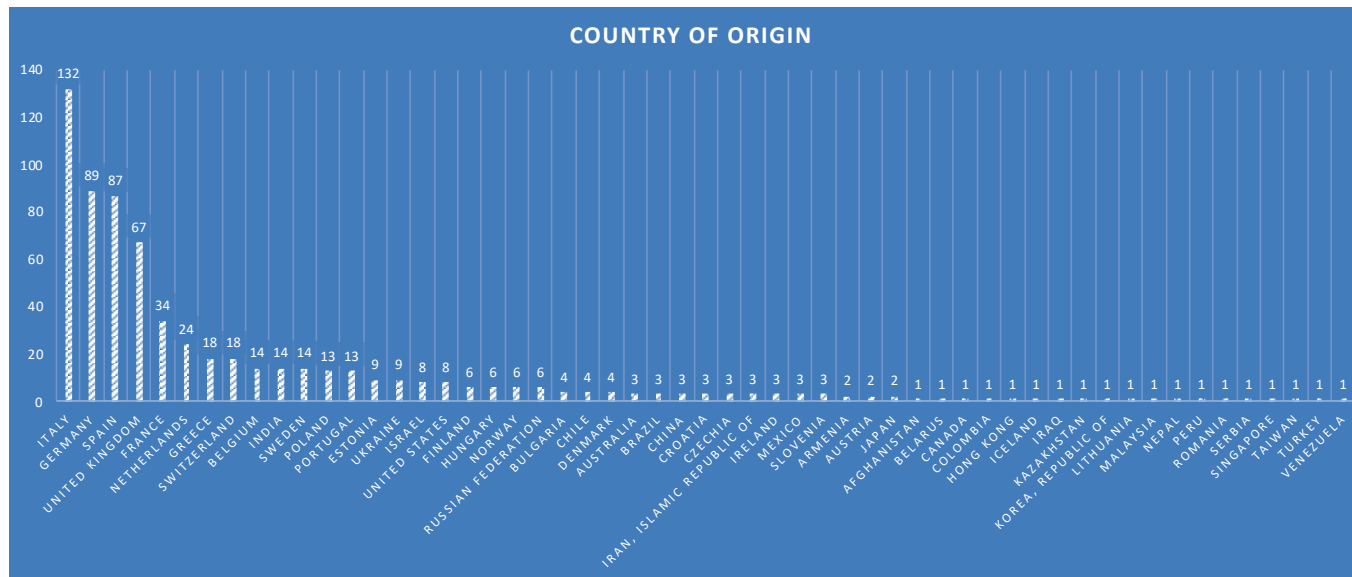
- 660 Scientists working in 31 European countries (plus 5 non-European countries) have completed the 1st EuCAPT census in January
- 53% of participants affiliated to 4 countries: UK, Italy, Spain, Germany
- Possible bias introduced by channels used to advertise census.



# Census — country of origin



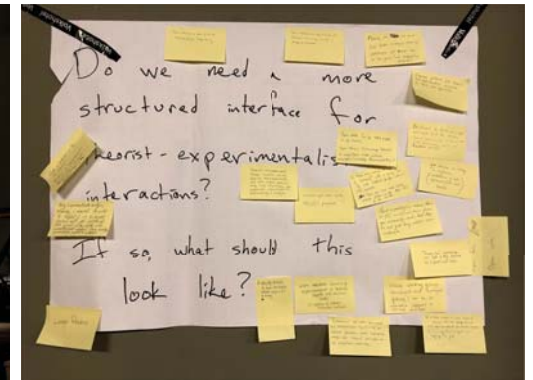
- 55 nationalities represented in EuCAPT
- 56% of participants originate from 4 countries: UK, Italy, Spain, Germany
- Again, possible bias introduced by channels used to advertise census



# Workshops



- 2 thematic workshops / year
- 1st in Amsterdam Nov 19, on “Gravitational Wave Probes of fundamental physics”

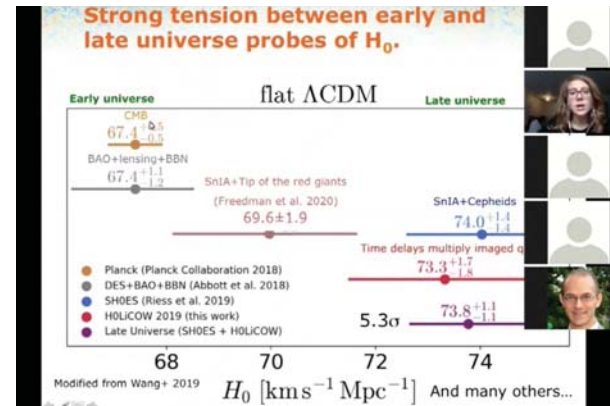


- Focus on interdisciplinary themes + collaborative work + new ideas
- Situation of workshops in 2020 unclear due to pandemics

# Virtual Colloquia



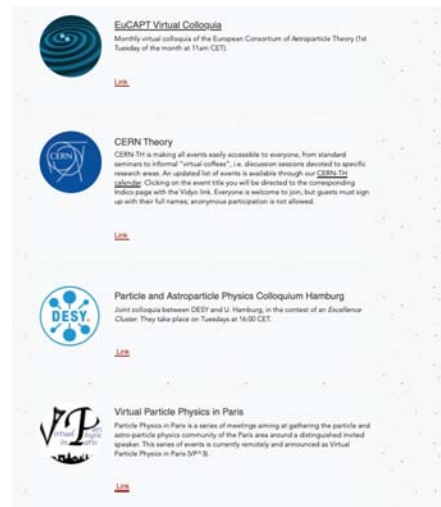
- Very strong interest from the community, 200+ participants and growing
- First talks: Joachim Kopp (Dark matter), Vitor Cardoso (GWaves), Silvia Galli (H0 tension).
- Very good feedback from community, registered scientists went beyond 720+



- Recording available on CERN CDS (Streaming and download)

# List of virtual events

- Resource for the community @ <https://www.eucapt.org/virtual-meetings>



**EuCAPT Virtual Colloquia**  
Monthly virtual colloquia of the European Consortium of Astroparticle Theory (at Tuesday of the month at 11am CET)

[Link](#)

**CERN Theory**  
CERN Th is making all events easily accessible to everyone, from standard seminars to informal "virtual coffees", i.e. discussion sessions devoted to specific research areas. An updated list of events is available through our [CERN Th calendar](#). Clicking on the event title you will be directed to the corresponding Indico page with the Video link. Everyone is welcome to join, but guests must sign up with their full names, anonymous participation is not allowed.

[Link](#)

**Particle and Astroparticle Physics Colloquium Hamburg**  
Joint colloquia between DESY and U. Hamburg, in the context of an Excellence Cluster. They take place on Tuesdays at 14:00 CET.

[Link](#)

**Virtual Particle Physics in Paris**  
Particle Physics in Paris is a series of meetings aiming at gathering the particle and astro-particle physics community of the Paris area around a distinguished invited speaker. This series of events is currently remotely and announced as Virtual Particle Physics in Paris (VPP3).

[Link](#)



**EuCAPT / HIDDEN Webinars**  
Webinar series organized in the framework of the EuCAPT ITN, spanning a variety of topics ranging from astroparticle physics and cosmology to colliders, model building and phenomenology related to dark matter, neutrinos, dark energy and other equally interesting particles. Sessions are held every two weeks, on Tuesdays at 3pm (European Central Time), using the Blackboard Collaborate system. After the EuCAPT ITN ends, the webinars will continue in the framework of the a similar ITN called HIDDEN.

[Link](#)

**On-line "Newton 1665" seminars**  
Online seminars about phenomenology/theory/astro/cosmo, and more, organised by R. Franceschini, A. Hebeck, K. Kamikawa, L. di Luino, M. Napolitano, R. Parisi, M. Rigi, A. Strumia, D. Tesei, A. Tesi, R. Torre, A. Urbano et al. No fixed dates, see link for schedule.

[Link](#)

**VIA Lectures**  
Astroparticle Physics webinars streamed with Adobe Connect, organised by M. Chiappero et al.

[Link](#)

- Setting up a calendar, with all open virtual events in Europe and USA



# EuCAPT task forces

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**Piero Ullio - EuCAPT Colloquia**

Collects suggestions; invites speakers; coordinates technical aspects; records and makes recording available on CDS (with CERN staff support)

**Philippe Brax - EuCAPT thematic Workshops**

Collects suggestions; proactively explores interests of relevant institutions; identifies topics and venues; coordinates with local organisers;

**Licia Verde - Governance / elections**

Helps draft governance; establishes rules for election SC members; clarifies role of participating institutions; identifies procedure for community polls and voting

**Vitor Cardoso - Community building**

Coordinates travel grants; prizes to be awarded at annual symposia; drafts code of conduct; acts as ombudsperson

**Gian Giudice - Annual Symposium**

Chairs the annual symposium LOC

**David Marsh - Website**

Coordinates design and contents of the Website (already in place);

**Andrew Taylor - Newsletter**

collects and compiles news for the website; sends out (weekly? monthly?) newsletter

**Toni Riotto - White Paper**

Coordinates task force white paper in charge of defining contents; identifies key editors; coordinates writing and submission

**Subir Sarkar - Joint grant proposals / lobbying**

Proactively searches for joint grant opportunities to support the community; coordinates lobbying efforts with APPEC, national funding agencies, and possibly EU to attract funding and resources for EuCAPT community

**David Langlois - Training**

Coordinates ongoing training activities in Europe; actively looks for opportunity to promote interdisciplinary training; identifies gaps and opportunities in training

**Silvia Pascoli - Outreach**

Coordinates outreach efforts; explores new ideas e.g. youtube channel, social media efforts; general public events

## **Other connections with APPEC/ESCAPE/etc.**

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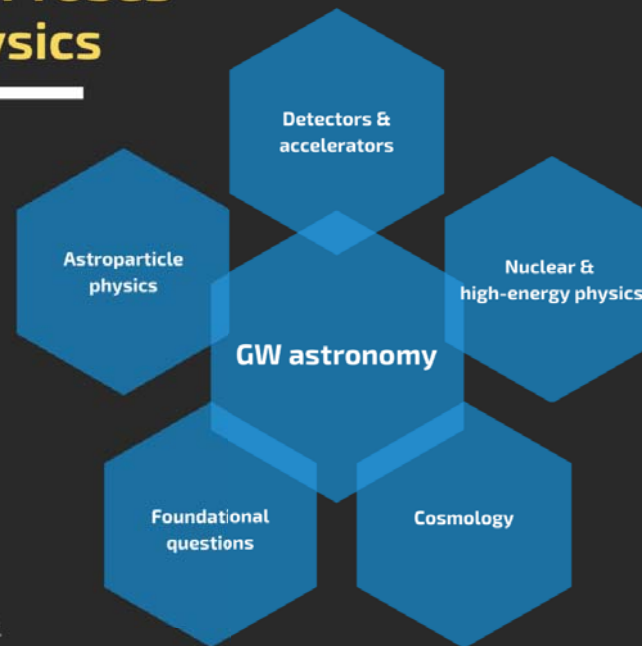
- **Supporting / coordinating 2 EoI for JENAS (APPEC+NUPPEC+ECFA)**
- **Dark matter**
- **Gravitational Wave Probes of fundamental physics (submitted TODAY)**
- **Supporting / coordinating corresponding Test Science Projects within ESCAPE**

# Jenas Eol: “GW for Fundamental Physics”

## Gravitational Wave Probes of Fundamental Physics

A cross-cutting initiative for a common platform to:

- Foster synergies among astroparticle, atomic, nuclear, high-energy, and gravitational physics, cosmology, and GW and multi-messenger astronomy
- Strengthen the connection between the theoretical and experimental/observational communities
- Share expertise, tools, cutting edge technologies to attack multidisciplinary problems
- Train a new generation of researchers with diverse expertise and background
- Share and disseminate knowledge in fundamental physics

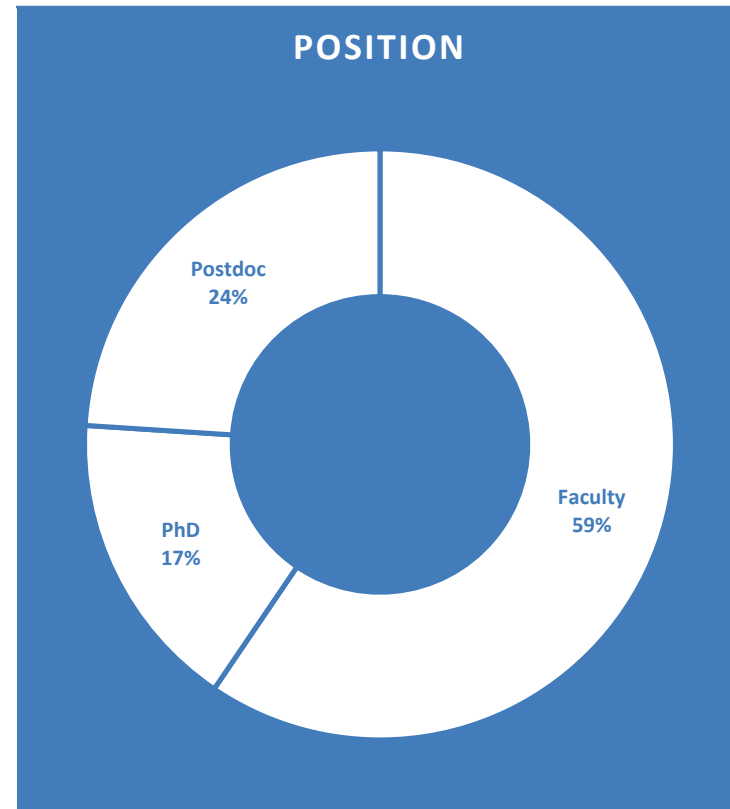


Endorse this initiative @ <https://agenda.infn.it/e/GWFundPhys>

Back up slides — More about the census

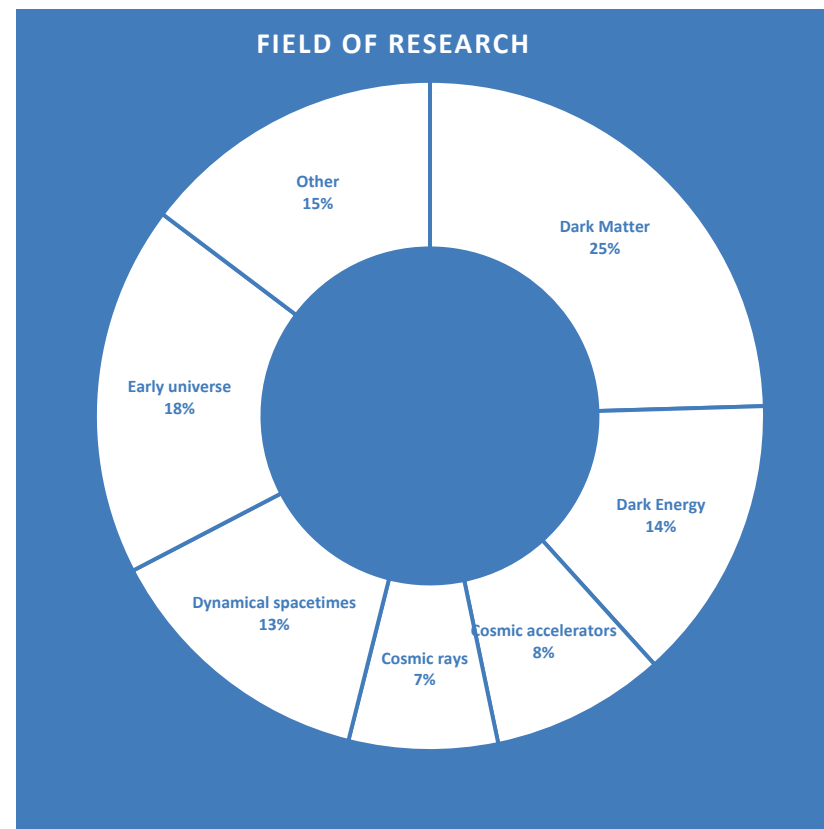
# Position

- The majority of registrants are faculty members.
- Important to reach out to younger scientists and encourage them to join.



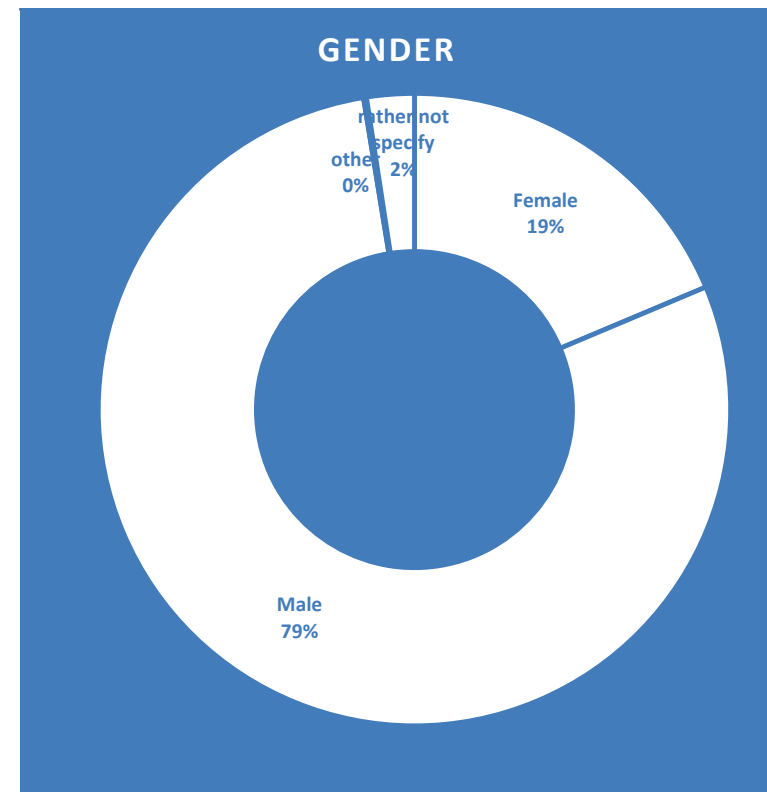
# Fields of Research

- A snapshot of the research interests of the EuCAPT community can be obtained by adding up the fraction of time spent by each registrant on a given field of research
- Macro areas explicitly mentioned in the census account for 85% of the time spent by registrants on theoretical astroparticle physics and cosmology
- 134 registrants used the free text box next to 'Other' to specify their field of research:
  - The work of 24 of them broadly falls in the category of 'low-energy neutrino astrophysics', which will be added as macro-area in the next census.
  - Among other, less frequent responses: machine learning, quantum gravity, and particle physics phenomenology.



# Gender

- Strong imbalance, only ~20% women
- Results appear consistent with data from the American Physical Society and the UK Institute of Physics, indicating that around 20% of the physics-research community is female (situation deteriorates significantly as one looks higher on the career ladder)  
<https://cerncourier.com/a/viewpoint-fixing-gender-in-theory/>



# Final remarks

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- 660 scientists completed the EuCAPT census: strong interest in Europe-wide coordination of Theoretical Astroparticle Physics and Cosmology
- The community is arguably even bigger. EuCAPT will reach out to those who have not yet completed the census, and to groups/communities which appear underrepresented (e.g. low-energy neutrino astronomy, nuclear astronomy, PhD students)
- The data collected offer a first, albeit possibly biased, snapshot of the research interests of the Astroparticle and Cosmology theory community
- The data collected will allow EuCAPT to effectively start the process of consolidating and coordinating the relevant scientific community
- Those who have not completed the EuCAPT census but want to be informed about EuCAPT, can sign up at <https://www.eucapt.org/census>