

# Introduction to UNDARK

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# Widening program & Twinning actions

Canary Islands



- ▶ **Widening:** Actions targeted at supporting EU countries (and **Outermost regions**) which are less developed in terms of their R&I profile
- ▶ **Twinning actions**
  - Aim to enhance networking activities between research institutions in the Widening regions and top-class leading counterparts at EU
  - Intend to help raise the research profile of the Widening institution

- short-term staff exchanges; expert visits and training.
- organization of workshops and school-type activities
- conference attendance
- dissemination and outreach activities
- activities to improve proposal preparation and project management
- exploratory research project

**Raquel Horcajada** (EU Project Officer)- next talk

# Spreading excellence: UNDARK



## The IAC as Widening coordinator

### STRENGTHS

- Direct access to best astronomical observatory of EU
- Excellence in observational astrophysics
- Strong PhD and post-doctoral training program
- Experience in hosting visitors and arranging international consortia
- Recognised in Spanish R&I

### WEAKNESSES

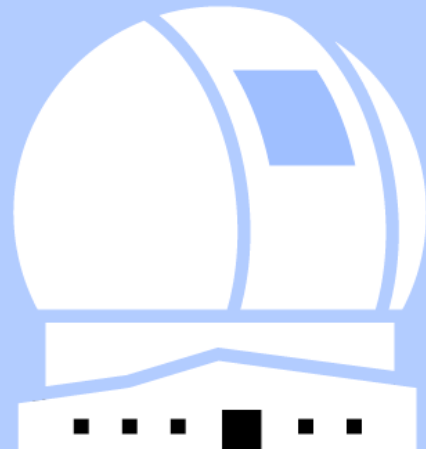
- Limited theoretical knowledge
- Knowledge gaps in astroparticle physics
- Far from EU science clusters
- Limited visibility in international R&I and few leadership roles in consortia
- Limited public recognition beyond the Canary Islands

### OPPORTUNITIES

- 1 Theoretical guidance and exploitation of IAC's astronomical expertise
- 2 High-potential impact in astroparticle physics
- 3 International leadership in dark-matter research
- 4 Boost visibility in international R&I
- 5 Boost public recognition in Spain and beyond

### THREATS

- 1 Different disciplines fail to leverage mutual synergies
- 2 Talented researchers repelled by peripheral location
- 3 Progress strangled by inefficient research management and technology transfer
- 4 Regional/Spanish funding below sustainability




# Scientific Leitmotif

## IAC

- ▶ Observatories
- ▶ Astrophysics
- ▶ **No theory**



 Astroparticle  
Theory

## Excellent partners

- ▶ Theory knowledge
- ▶ Physics laboratories
- ▶ **No observations**
- ▶ Management training

### 3 Strategic lines at the IAC (STRAT)

- ▶ STRAT1 - Gamma ray telescopes
- ▶ STRAT2 - CMB experiments & LSS
- ▶ STRAT3 - Galaxy groups (sims, xtra & MW)



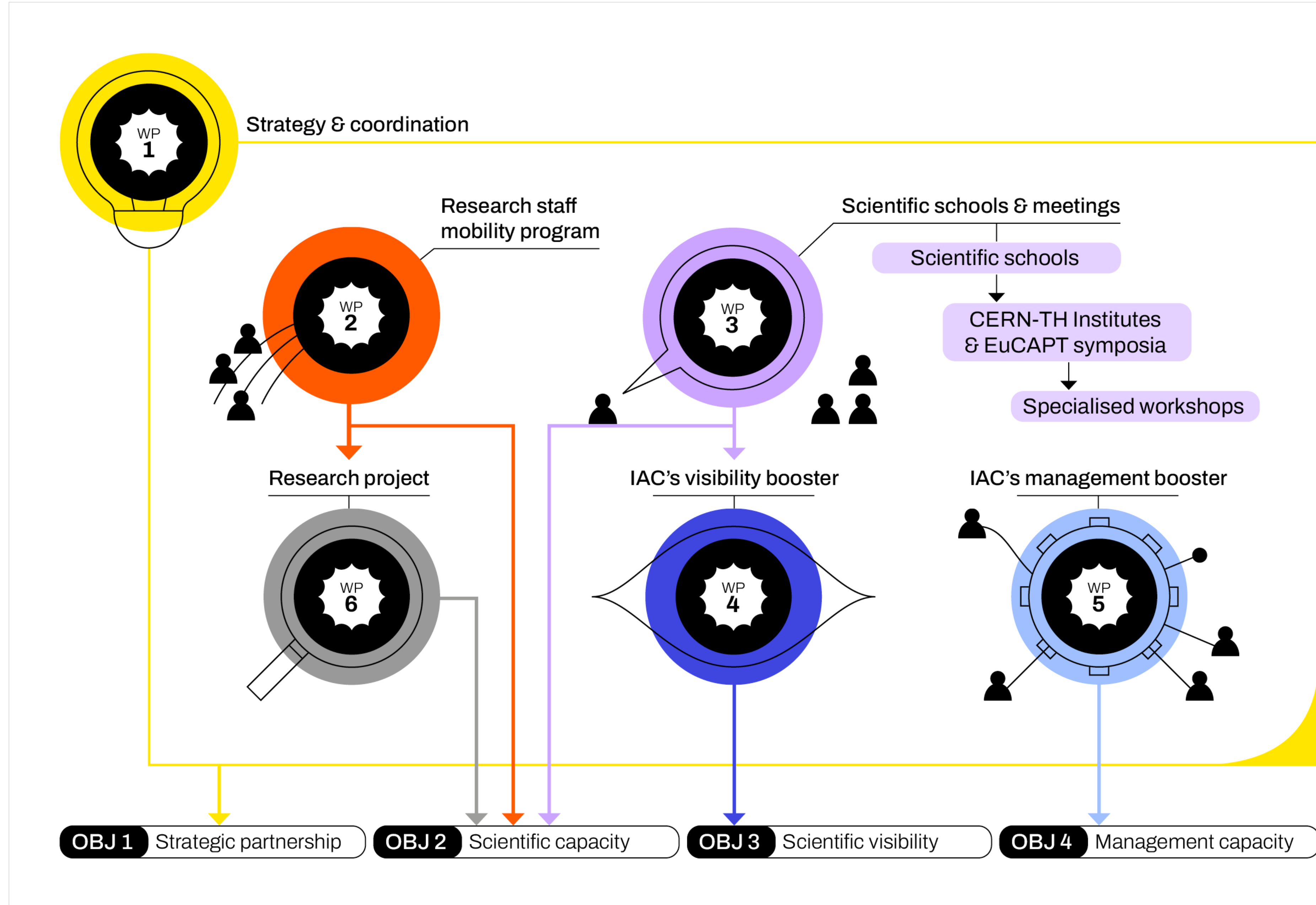


*"Unravelling the dark universe from the Canary Islands Observatories"*

1. IAC (Me): Coordinator
2. CERN-TH: Valerie Domcke - Cosmology and GWs
3. CNRS-LAPTh: Francesca Calore - [Gamma rays](#)
4. IFAE: Diego Blas - [Microwave](#), quantum and GWs
5. WIS: Kfir Blum - [Galactic dynamics](#)
6. SAT: Ana Sofia Branco - EU projects consultant

- ▶ **Funding:** 1.478 M€ total (~1.0 M€ for the IAC)
- ▶ **Starting date:** [October 1st 2024](#)
- ▶ **Duration:** 3 years

# Strategy and workplan in a nutshell



# WP1 : Strategy & Coordination

- Project Manager at IAC:
  - Documentation and communication with EU
  - Operational support to the PI (workshops, visitors, hirings, ...)
- **Steering Committee:** online-meetings every 2 - 3 months
- **External Advisory Scientific Committee**
  - Provide external assessment and reports

The following scientists have expressed interest in participating in the ESAC of UNDARK: **Gianfranco Bertone** (Amsterdam U. and Director of EuCAPT) and **Nanda Rea** (ICE) in the EU region, **Lam Hui** (Columbia U.), **Mariangela Lisanti** (Princeton) and **Tracy Slatyer** (MIT) in the US, and **Kazhunori Kohri** (NAOJ) in Asia.

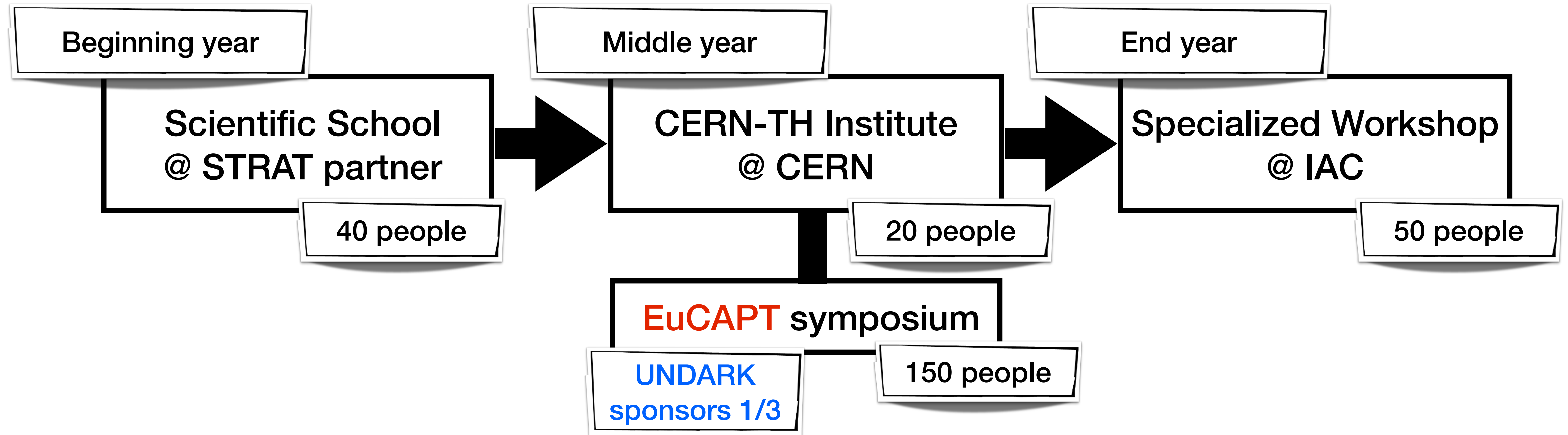
**UNDARK's kick-off (in-person) meeting at the IAC**

# WP2 : Research Staff Mobility Program

- ▶ **IAC Missions:** IAC  $\iff$  partners (medium-term visits)
- ▶ **CERN Missions:** Contribution to CERN-TH visitor program
- ▶ **Travel (IAC):**
  - **UNDARK seminar program:** 1 visitor/month for 1 week
  - **Visitor program:** Extra budget for longer stays
  - **Participation in conferences:** Limited to the theme of the network!
- ▶ **Travel (partners):**
  - 3 speakers total for seminars @ IAC
  - Participation in conferences.



# WP3 : Scientific Schools and Meetings



- Annual cycle starting from 2025
  - ▶ 2025: DM in radio, GWs ...
  - ▶ 2026: Gamma ray probes of DM
  - ▶ 2027: Galactic probes of DM

- Annual workshop @ IAC
  - ▶ Funds for each workshop/school!

**Help to shape program! (SOC/LOC)**

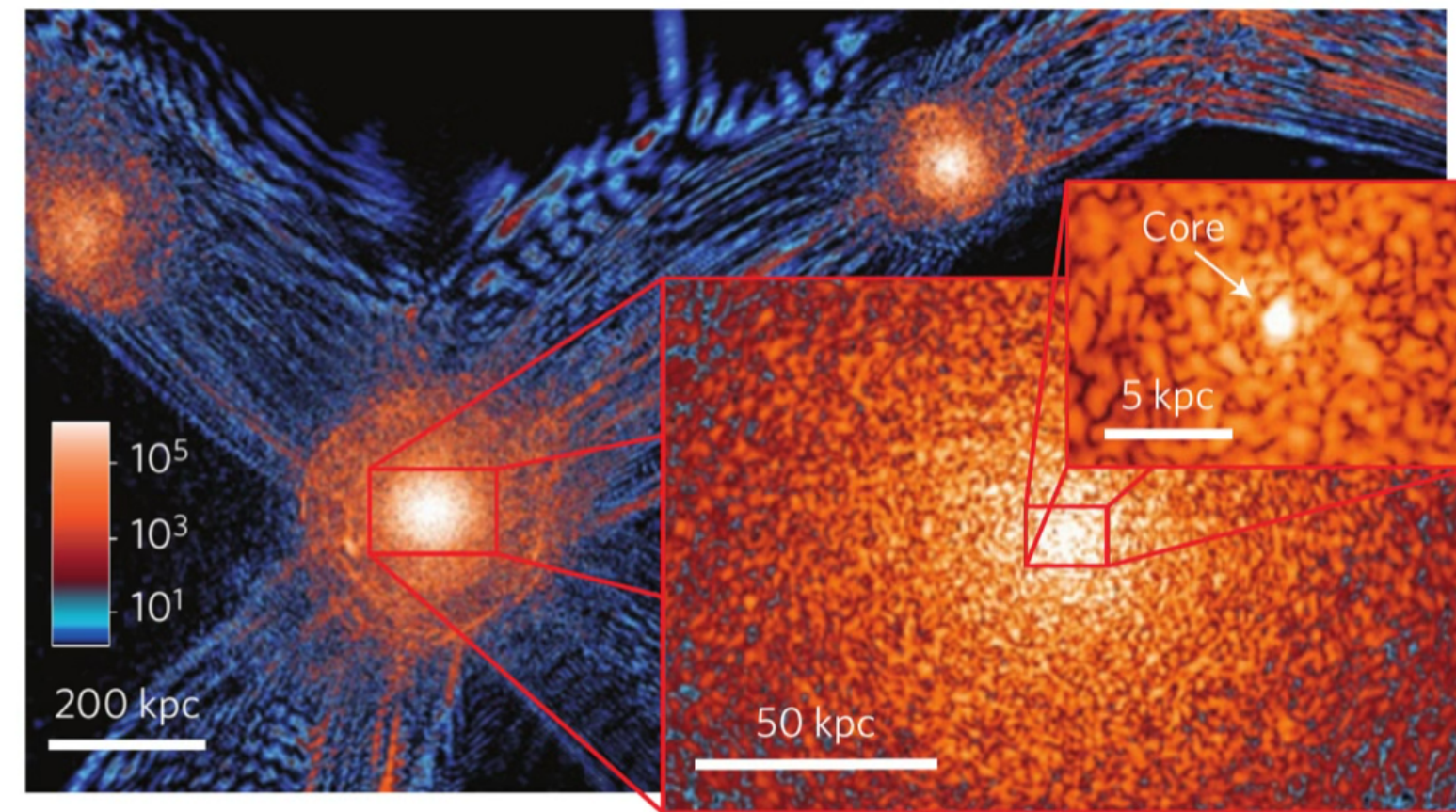
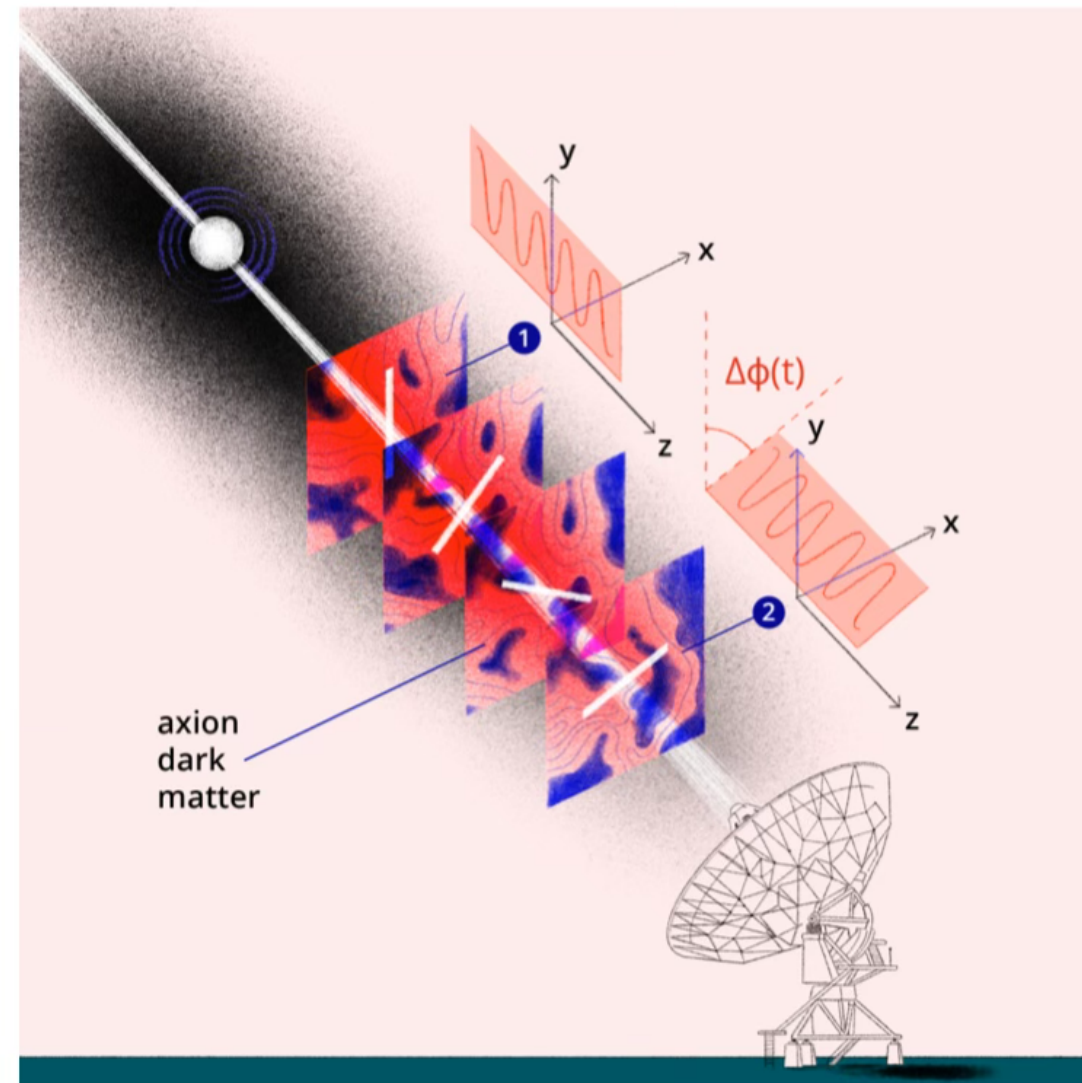
# WP4 : IAC visibility booster

- ▶ enhance dissemination scientific output;
  - ▶ transfer knowledge ("astroparticles") to the general public;
  - ▶ increase public awareness about IAC and science.
- **Actions:**
    - ▶ online visibility ([UNDARK's website](#) and logo);
    - ▶ production of visual scientific and outreach materials (images, scientific booklets, videos ...) - there is a concrete plan
  - **Scientific illustrator at the IAC**

# WP5 : IAC's management booster

- ▶ exchange of research management best practices;
- ▶ boost elaboration of HE proposals and efficiency of management.
- **Actions:**
  - ▶ short visits of IAC's admin staff to partners;
  - ▶ HE proposal elaboration workshops and tutoring for researchers;  
**Ana Sofia Branco** - talk this morning and meeting with IAC researchers on Wednesday afternoon.
- **Promoting gender balance in physics**
  - ▶ 50% PIs, ~30% participants and ~20% speakers at ko meeting
  - ▶ Gender in Physics led by WIS  
**Yossi Nir** - talk on Wed 9 afternoon session

# WP6 : Exploratory Project - New Lights on ULDM



- ▶ **ULDM = Ultra-light dark matter**
  - ▶ Axions, dark photons, ...
  - ▶ Can be probed by 3 STRAT
  - ▶ Umbrella for *any* relevant DM study at the IAC !!

- **Research personnel hired by UNDARK:**

- ▶ PhD student 3 years at IAC on STRAT1 ([Ruben Zatini](#) - talk next session)  
Co-tutelle with CNRS-LAPTh
- ▶ PhD student 1 year at WIS on STRAT3
- ▶ Postdoc 2 years at IAC starting fall 2025 on STRAT2
- ▶ Postdoc 2 years at IAC starting fall 2025 on STRAT3

# Synergies with other EU projects at the IAC

- **ExGalTwin: Excellence in Galaxies - Twinning project**
  - ▶ **Radio astronomy** (University of Groningen)
  - ▶ **Numerical Modelling** (University of Durham)
  - ▶ **Exploitation of Modern surveys** (CNRS, Observatoire de Strasbourg)
- **EDUCADO: Marie Sklodowska Curie Doctoral Network on "Exploring the Deep Universe by Computational Analysis of Data from Observations"**
  - ▶ **Astronomy + computer science; 2 PhD students (11 in total) at the IAC**



Both projects are coordinated by the IAC  
PI: Prof Johan Knapen

# Latest News and logistics

- ▶ Hiring Project Manager ongoing - hopefully starting November
  - ▶ Calls for postdoctoral positions appearing soon
  - ▶ First UNDARK school by IFAE on March 10 - 15 in Benasque
  - ▶ Organization of first UNDARK CERN-TH institute and workshop ongoing!
  - ▶ Planning of first UNDARK visits to the IAC and partners ongoing!
  - ▶ Planning of HE trainings (SAT) ongoing!
- **Use the following code to refer to participation in the project**

**HORIZON WIDERA-2023-ACCESS-02-01, 101159929 - UNDARK**

- ▶ High-quality logos will be available in the website

# Concluding remarks

- **Kick-off meeting:** *"The goal is to trigger discussions and collaborations between IAC astronomers and theorists from the partners at the very earliest stage of the consortium"*
  - ▶ please, try to keep your talks within 20' - Allow for discussions!
  - ▶ I know you are not shy so please ask questions!
  - ▶ join lunch and **speakers invited** to social dinner on Thursday
  - ▶ please, return the badges before you leave!

**Welcome and Enjoy the Meeting!**



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