

# Planes Complementarios ASTRO+HEP

**LIA2: Development of state-of-the-art astrophysical instrumentation for ICTS, ESFRI projects in Astronomy and space missions**

**Zaragoza - 5 June 2024**



# PPCC “Astro+HEP” - LIA2

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The study of the origin and evolution of the universe is approached by astrophysics through the study of the structures of the cosmos. **Astrophysical observations require the continuous development of advanced scientific instruments.** In this line, the ICTS, ESFRI projects in astronomy and space missions of astrophysical interest are planned to develop **state-of-the-art instrumentation**, ensuring leadership and high international visibility.

## **New state-of-the-art instrumentation for astronomical ICTSs**

- High-sensitivity detectors for the new large-field **2D spectrograph for CAHA.** Optical-mechanical design of TARSIS → **Jesús Aceituno (AN)**
- **Instrumental completion of JPCam@JST250** and implementation of its electronics laboratory → **Antonio Marín-Franch (AN, AR)**

## Instrumental developments for ESFRI projects in Astronomy

- Preliminary design of the **Tunable Imaging Spectrometers (TIS) of the European Solar Telescope (EST)** (AN)
- Development of a **pixelated sensor based on silicon photomultipliers (SiPM) for the improvement of the cameras of the CTA** Cherenkov telescopes.  
Development of gamma-ray data analysis tools → **Juan Abel Barrio (AI Algorithms for CTA Telescopes)** (AN, CAT)
- Developments for ELT's second-generation **MOSAIC and ANDES** instruments.
- **Design studies for the Next Generation Event Horizon Telescope (ngEHT)** (AN, CV)

## Instrumental developments for space missions

- Development of the **cosmic and gamma-ray detection trigger system** based on FPGAs and ASICs for **HERD** (space-based cosmic ray and gamma ray detector) → **Javier Rico (CAT)**
- Development and fabrication of the **engineering model of the Wide Field Monitor (WFM) camera of the eXTP X-ray mission**, including optical system, side collimator and support structure → **Margarita Hernanz (CAT)**
- Evaluation of the proposed technologies for the **thermometry readout and control system of the Medium and High Frequency telescopes of the LiteBIRD** Cosmic Microwave Background Polarisation (CAN) mission → **Francisco Javier Casas (CAN)**