

Duration: 09:00 – 18:20

Room: N115

WS-10

Radioastronomy Instrumentation

Organisers:

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Abstract

Radioastronomy instrumentation is a very exciting area where huge interdisciplinary areas must work together.

This workshop aims to bring together astronomers, physicists, and engineers working on detectors and low-noise instruments for the far-infrared/submm/mm wavelength range. It will cover current and future imaging and spectroscopic arrays, both bolometric and heterodyne, for ground-based and space-borne telescopes, the physics of semiconducting and superconducting detectors and readouts, the optimization of long-wavelength optical systems, new developments in coherent receivers and spectrometers, and the design and optimization of components such as optics, filters, and local oscillators. In addition to these component technologies, the conference will examine instrument architectures as well as recent application examples.

This Radioastronomy instrumentation workshop is designed to explore the current and foreseeable state-of-the-art of space telescope and instrumentation programs, concepts and technologies from the near-ultraviolet and visible wavelengths through the infrared and millimeter regions. NASA's Hubble Space Telescope (HST), the Spitzer Space Telescope, Kepler/K2, and the airborne SOFIA programs are continuing observations and/or reviewing science proposals for new observation cycles. ESA has launched and is collecting data from the Global Astrometric Interferometer for Astrophysics (GAIA), a mission that will compile an astrometric catalogue of ~1 billion stars with a second data release in April 2018.

For this workshop, status reports on projects of all sizes and the science questions that they address are sought, as well as talks addressing topics that include, but are not limited to, the following issues and opportunities: performance requirements; instrumentation (imaging, polarimetric, and spectroscopic); instrument performance; detectors; receiver technologies; signal read-out; optical design; optical components; other associated technologies; observing techniques; emerging concepts.

Finally, the events and studies that will determine the future of space observatories for the next few decades are occurring right now, and the active participation of students is particularly important for this workshop. Students are encouraged to assist addressing both science requirements and technology enablers, conventional and unconventional. Opportunities to reach out to other disciplines and to the public at large are sought to increase understanding of the value of space observatories and consequently their basis of support. We look forward to a vigorous response to this workshop from across the space telescope community.

Programme

Cosmic Microwave Background Detection with QUIJOTE Telescope

Rafael Rebolo¹

¹Instituto Astrofísico de Canarias

Photonic Local Oscillators for Radioastlescopes

Iván Cámara Mayorga¹

¹Max Planck Institute for Radioastronomy

Advances in Quasi-optical Design and Analysis for Millimetre/Submillimetre-wave Receiver Systems

John A. Murphy¹

¹National University of Ireland, Maynooth

1.9 THz Silicon Micromachined Multi-Pixel Receiver Instrument

Goutam Chattopadhyay¹

¹NASA-Jet Propulsion Laboratory, California Institute of Technology

Submillimeter Wave Astrophysics at Caltech

Jonas Zmuidzinas¹

¹Jet Propulsion Laboratory

Antenna-Array Digital-Beamforming and Calibration Methods for the Next Generation Multi-Beam Spaceborne Radiometers for Ocean Observations

Marianna Ivashina¹

¹Chalmers University

The ESO submillimetre observatories: ALMA and APEX

Leonardo Testi¹

¹European Southern Observatory

Microwave Room Temperature Photon Counting Detector

Gabriel Santamaria¹, Luis Garcia Muñoz¹

¹Universidad Carlos III de Madrid