



# Detectors & Electronics

## INAF OATo

G. Nicolini

# Overall expertise (low energy)



OATo staff since late 80s when TIRCAM - the first Italian bidimensional IR camera - was designed, built and put in operations at the TIRGO telescope, have developed expertises in characterizing and managing a variety of optical detectors for astronomy (CCDs, CMOS, near- and mid-IR hybrid detectors), and developing parts of the detector system chain.

Although, after the completion of the VLT-I PRIMA-FSU project, the staff is currently not active in this field, most of these expertises are relevant and could be used to INAF advantage.

# Overall expertise (low energy)



- **Characterization and selection of IR and visible CMOS detectors**
  - Raytheon InSb, Si:Ga, Si:As, Teledyne HgCdTe Hawaii1/Hawaii 2RG
  - polarimetric sensors Sony IMX253MZR
- **Design and development of FEE Electronics**
  - arbitrary readout and acquisition modes
  - A/D conversion and number crunching
- **Design and development of detector assembly**
  - Detector handling and integration
  - Housing and cryogenic interface
  - Detector board
  - Cryogenic Amplifiers
- **Operations and performance optimization of IR and VL cameras**
  - Readout techniques definition and implementation
  - Handling of vacuum and cryogenic systems (Open cycle LN2, LHe, Closed cycle He)
  - fine tuning of detector polarization and read-out control

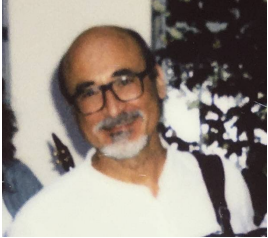
# Overall expertise (high energy)



- **Design and development of particle detectors for astrophysics**
  - plastic & liquid scintillator
  - water Cerenkov stations
  - WLS optical fibers read out
- **Characterization and selection of optical sensors : Photomultiplier & SiPM**
  - Photonis XP1805
  - Hamamatsu R8619, R9420, R5912
  - RGB & UV FBK SiPMs
- **Design and implementation of electronic circuits:**
  - Trigger logic
  - ACQ boards
  - High voltage dividers & supplies

# People & Projects

## Leonardo Corcione



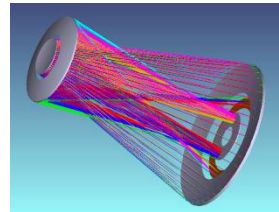
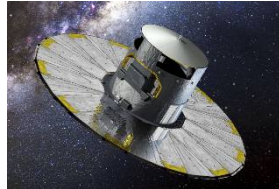
- Design, development and characterization of FE electronics (power supply, buffering, clock, amplification, signal conditioning, A/D conversion, number crunching) [TIRCAM, TC-MIRC, CCD cameras, other sensors]
- Characterization of radiation damage on CCD used in space missions (GAIA)

# People & Projects



## Mario Gai

- Design, development and characterization of FE electronics (power supply, buffering, clock, amplification, signal conditioning, A/D conversion, number crunching) [TIRCAM, TC-MIRC, CCD cameras, other sensors]
- Modelization and performance analysis for ground and space based instrumentation and cameras





# People & Projects

## Sebastiano Ligori

- Selection, Characterization and test of IR detectors (e.g.: Raytheon Mid-IR Si:As detector; Hawaii 1/Hawaii2RG)
- Implementation of custom made read-out modes for Optical Interferometry application

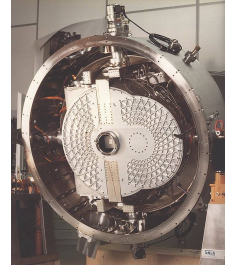


# People & Projects



## Giana Nicolini

- Characterization and selection of IR and visible CMOS detectors
- Design and development of FEE Electronics
- Design and development of detector assembly
- Operations and performance optimization of IR and VL cameras







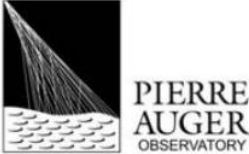









# People & Projects

## Maurizio Pancrazzi

- Design, development and characterization of electronics and software for detection systems,
- Design and development data pipeline
- Design and operation of vacuum systems
- Functional and performance testing on ground and space based instrumentation and cameras

# People & Projects



	<p>UHE Cosmic Ray</p>	 <p>Antonella Castellina</p>	 <p>Marco Aglietta</p>	<p>Particle Detector Optical Sensor Electronics</p>
	<p>Ground Based Gamma Ray Asstronomy</p>	 <p>Piero Vallania</p>	 <p>Silvia Vernetto</p>	<p>Particle Detector Simulation DAQ</p>
	<p>Direct Dark Matter Search</p>	 <p>Giancarlo Trincherò</p>	 <p>Andrea Molinaro</p>	 <p>Walter Fulgione</p> <p>Particle Detector DAQ</p>

End

