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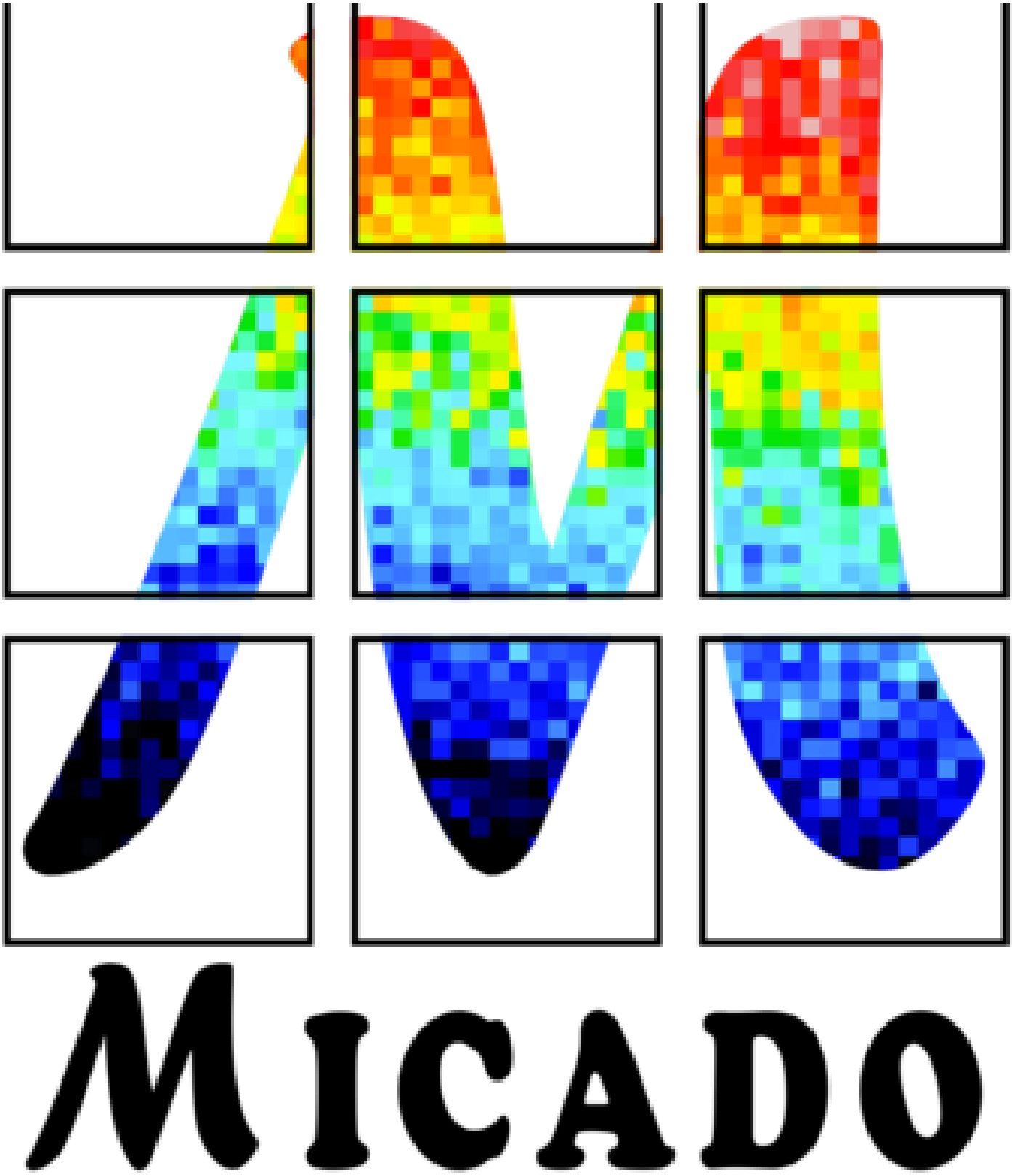
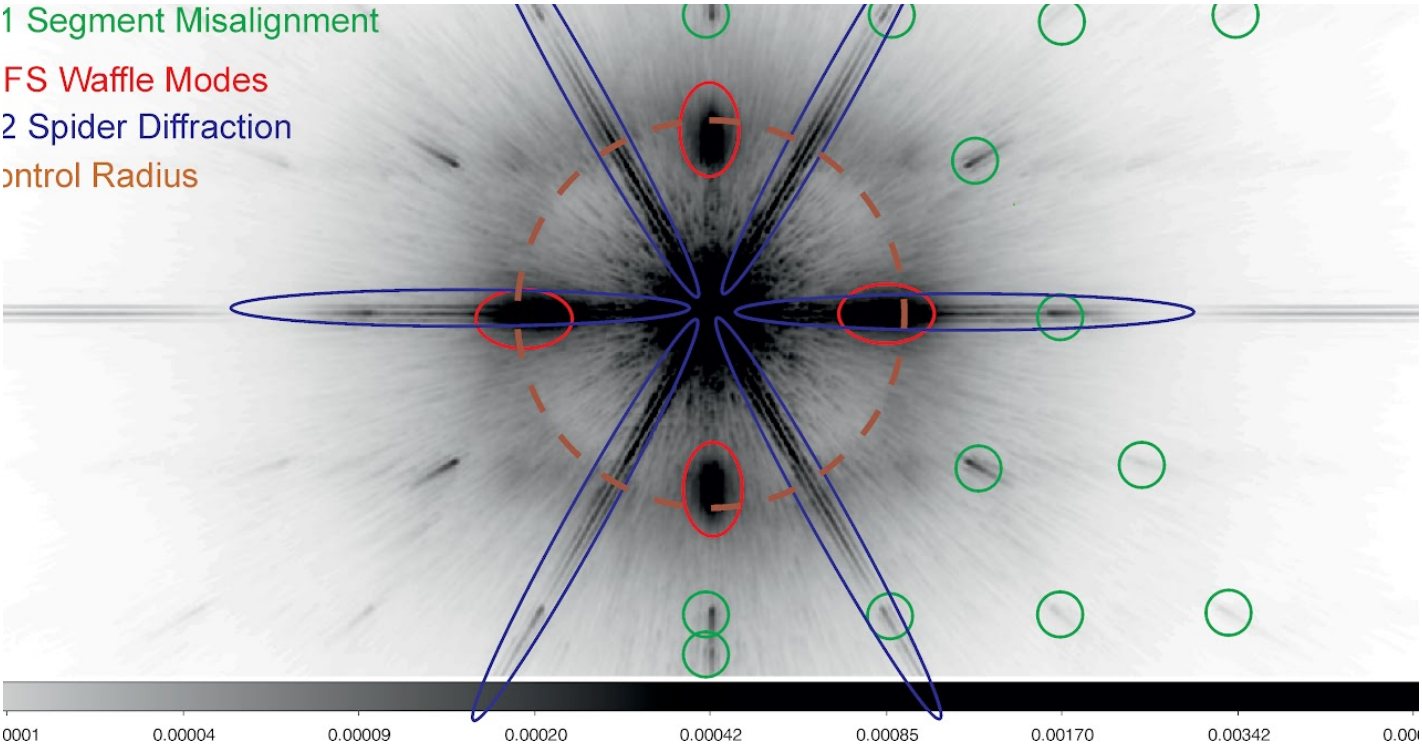

MICADO

The National Institute for Astrophysics (INAF) supports the development of the Multi-AO Imaging Camera for Deep Observations (MICADO), one of the first-light instruments for the Extremely Large Telescope (ELT) of the European Southern Observatory (ESO), as part of the MICADO Collaboration. The MICADO camera will provide the future largest telescope of the world, and will be equipped with both imaging and spectroscopic capabilities. It will observe from I to K band (0.8-2.4 micron). It will benefit of the aberration correction provided bystate of the art Single Conjugate Adaptive Optics (SCAO) and Multi-Conjugate Adaptive Optics (MCAO) systems. Adaptive Optics (AO) will provide the real-time correction of the optical turbulence and telescope residual aberrations. While the SCAO system generates pinpointing dramatic performance, the MCAO allows exquisite details on large the large 51"x51" arcsec field of view, approximately 1/30 the size of the full Moon, covered by the 3x3 grid of MICADO scientific detectors. The current schedule foresees the instrument completed and mounted on the ELT in 2025 and fully commissioned by 2027.

INAF researchers in Padova and Roma Observatories lead the development of the PSF-Reconstruction (PSF-R) software package for MICADO. INAF, in this way, got a first-class ticket for the future exploitation of ELT telescope: INAF researchers are also involved in the panel (a.k.a. Science Team) for the astronomical primary driver definition for MICADO. The whole PSF-R team includes 21 members spread across six European institutes (Austrian, French, and of course, Italian). The role of INAF in MICADO complements the INAF's leadership in the MAORY consortium as one of the primary stakeholder of the ELT science.

Carmelo Arcidiacono, webmaster and MCAO sims wokpackage Manager



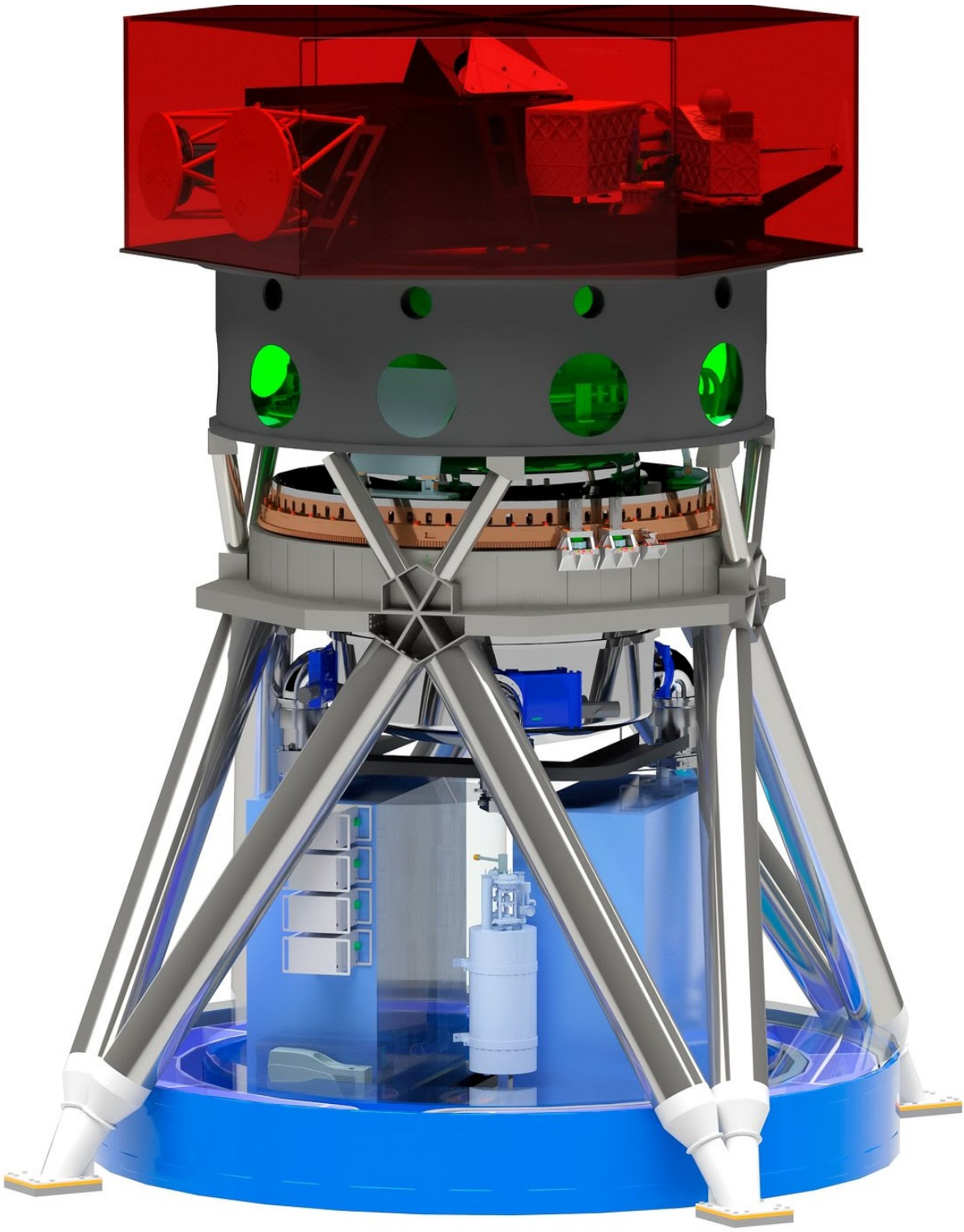
Pattern decomposition by the source as measurable on the MICADO SCAO PSF.

PSF Reconstruction

The PSF-Reconstruction is the generic name for the capability to compute the optical response (Point Spread Function or PSF) of the full optical tray using generic instrument telemetry data. In the MICADO case, we are developing a set of algorithms that allow building for each data frame MICADO will take the corresponding PSF. The PSF may vary from frame to frame because of the dynamic behavior of the optical turbulence, internal vibrations, instrument and telescope uncompensated flexures, and many more minor wavefront error sources. The developing algorithm builds the residual wavefront left by the AO correction by using the slopes signal registered by the wavefront sensors on board the MICADO SCAO or on the MAORY MCAO.

The MICADO Collaboration is composed by: Max-Planck-Institute for extraterrestrial Physics, (MPE - Germany), Max-Planck-Institut for Astronomy, (MPIA - Germany), Ludwig-Maximilians-Universität München (USM, Germany), Georg-August-Universität Göttingen/Georg-August-Universität Göttingen Stiftung Öffentlichen Rechts (IAG, Germany), Netherlands Research School for Astronomy (NOVA, Netherlands), Centre National de la Recherche Scientifique,Institut National des Sciences de l'Univers (CNRS/INSU, France), Austrian partnership comprises the University of Vienna, the University of Innsbruck, the University Graz, the University Linz and RICAM Linz (Austrian Academy of Sciences). Contributions to MICADO are coming from Vienna, Innsbruck and Lin., University of Turku Finnish Centre for Astronomy (FINCA, Finland), and, of course, INAF.

The Principal Investigator is Ric Davies, MPE. CoI and Instrument Scientist Jörg-Uwe Pott, MPIA, CoI Florian Lang-Bardl, USM, CoI Harald Nicklas, IAG, CoI and Project Scientist Eline Tolstoy, NOVA, CoI Benedetta Vulcani, OAPD, CoI Yann Clénet, LESIA, CoI Joao Alves, A*, CoI Jari Kotilainen FINCA



A MICADO CAD side view. © MICADO consortium.