

A training checklist for observing with INGRID and OSCA

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This document attempts to summarise the main areas of familiarity for support astronomers training to perform adaptive optics observations with the NIR imager, INGRID and its coronagraph, OSCA.

GRACE

- you should be familiar with the general layout on the optical bench, especially of the light-path to INGRID and OSCA
- you should know how to remove and replace the covers on the various optical components that constitute the light-path, including the deformable mirror (DM)
- you should be familiar with the Nasmyth calibration unit (NCU), and be able to change pinholes and know how to configure the NCU to use the continuum lamp for K-band simplexing, and how to revert to use the simplex lamp

The observing system

- you should be familiar with how the observing system is configured for AO
- you should understand the purpose of the observing system windows, such as the camera mimics, light-path mimic, ICS window, topgui, Codeso GUI, INGRID and OSCA GUIs and so on, and be able to interpret any anomalies reported
- you should be able to (re-)start the Codeso server and GUI and the INGRID RTD

NAOMI

- you should know how to configure NAOMI for NIR AO set-up and observing, including flattening the DM, optimising pinhole focus, loading and checking a reconstructor and taking offsets, and on-sky, optimising the telescope focus and observing in high-order and tip-tilt modes etc.
- you should know how to configure the optical bench from Codeso
- you should know how to switch between observing with INGRID and OASIS
- you should know how to start and interpret FSM X,Y traces to ensure the integrity of guiding when on-sky

INGRID

- you should be familiar with the general techniques of NIR imaging, including how to treat the highly variable background
- you should know how to expose INGRID from the command line and/or its GUI
- you should understand the conflict between exposing INGRID from the simplex GUI and from the observing system at the same time
- you should understand how to ensure the detector is operating healthily within specifications in terms of read-noise, pickup noise and so on
- you should be familiar with INGRID's different read-out and storage modes
- you should understand the dominant source of background, especially in K-band
- you should be able to identify the ramped appearance of a saturated flat-field image
- you should know how to configure INGRID mechanisms (filter wheels and pupil stops) for AO set-up and observing from Codeso (both without and with OSCA deployed), and how to deploy and use the pupil imager
- you should know how to take calibration images such as dark current frames, sky flats
- you should know how to check the level of AO correction by observing a point source open- and close-loop on-sky
- you should understand not to place a point-target under study on a quadrant boundary, and how to move it off in such circumstances
- you should understand how to use the acquisition tool to acquire a target and guide star
- you should be able to close the NGS loop, initiate guiding and expose INGRID in stare or dither modes
- you should understand which measures to undertake to distinguish real, resolved on-sky structure from PSF artefacts

OSCA

- you should understand the basics of NIR coronagraphy, including dithering practices, PSF checks and sky background measurements
- you should know that OSCA is un-cooled
- you should know how to start, and be familiar with, the OSCA GUI
- you should understand how to deploy, and check the alignment of, the Lyot stop so that it covers and tracks the M2 and M3 mirror struts
- you should understand the range of focal-plane masks available, and which to use in a given circumstance
- you should understand that the focal-plane masks have a small throughput, and why
- you should know how to deploy OSCA in the beam, and that its FoV is both smaller and Y-inverted with respect to INGRID used alone
- you should understand how OSCA's FoV is vignetted
- you should know how to locate a focal-plane mask on the simplex GUI image
- you should know how to acquire an object on the WFS and then centre it behind a mask close-loop
- you should know how to perform rotational dithers close-loop