NAOMI News

C. Benn (ING), R. Ostensen (ING), R. Myers (Univ. of Durham), T. Gregory (ING) and A. Longmore (ATC)

NAOMI, the WHT's adaptive-optics unit, is currently offered to observers with the IR imager INGRID. Performance predictions were given in the March 2001 *ING Newsletter*, and updates can be found on the ING web page, at `http://www.ing.iac.es/Astronomy/instruments/naomi/`

Much progress was made during NAOMI's recent commissioning run in May/June. The AO loop was closed on guide stars as faint as V=13, dithered observations were achieved without opening the loop (by moving the telescope and guide-star pickoff mirror in tandem), and a new control *gui* was implemented, allowing observing to be carried out routinely by ING staff.

NAOMI is optically and electronically much more stable than in the past, and it is now normal to observe for a whole night without having to repeat the afternoon calibration of the mirror shape. As usual, unexpected events (a devastating hacker attack, failure of the x-stage motor on the deformable mirror, and accidental rotation of one of the off-axis paraboloids) ate into the nights available, but for the first time NAOMI/INGRID service observing was attempted (25 proposals were submitted).

Performance with faint guide stars was found to be degraded by the lack of baffling around the guide-star pickoff mirror, allowing each cell on the wavefront sensor to see ~20 square arcsec of sky. A baffle is being installed.

The high (~100%) emissivity in K band has now been traced mainly to surfaces in the Nasmyth derotator and in the (NAOMI-specific) foreoptics in INGRID. Replacements for both are being investigated. Observing in H and J bands is not affected.

In September, NAOMI's performance in the optical (R, I bands) was characterised on sky. In reasonable seeing, NAOMI typically reduced the FWHM by a factor of nearly 2, and an example of this spectacular performance is shown on the front cover. This bodes well for deployment of the integral-field spectrograph, OASIS, with NAOMI in late 2002. Significant correction was obtained for guide stars down to R=14. Galaxies will be the principal science targets of OASIS, and the AO loop was successfully closed on the nuclei of several, including M31 and NGC 1068.

Performance in the IR (J, H, K bands) is not yet well characterised, and one of the goals for 2002A is to map performance as a function of guide-star magnitude, band, radius from guide star, and natural seeing (a large parameter space). Another important goal is commissioning of a mode in which information is binned up on the wavefront sensor, allowing ~1 mag fainter guide stars to be reached, and thus increasing sky coverage (but with poorer correction).

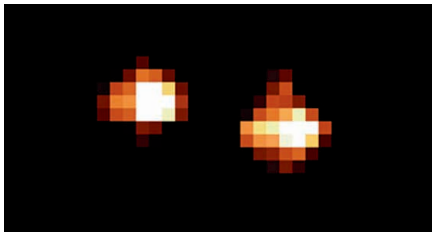

Figure 1. This 0.5-arcsec double star, R=11, was selected from the Palomar Sky Survey (on which it is unresolved) as the guide star for NAOMI observations of a nearby QSO. The wavefront sensor took this double image in its stride, and the delivered FWHM on the above 30-sec H-band exposure is 0.16 arcsec.

Commissioning of the coronographic feed to the science detectors (INGRID, OASIS) will take place early in 2002. ¤

Chris Benn (crb@ing.iac.es)

First Light on the New Small Fibre Module of Autofib2/WYFFOS

R. L. M. Corradi, K. M. Dee, R. A. Bassom, M. F. Blanken, S. J. Goodsell and M. van der Hoeven (ING)

Autofib2/WYFFOS is the multi-object, wide field fibre spectrograph working at the prime focus of the William Herschel Telescope. At the prime focus, the fibres are placed onto a field plate by the robot positioner Autofib2 (AF2) at user-defined sky coordinates. Object light collected at prime is transmitted along fibres 26 metres in length to the Wide Field Fibre Optical Spectrograph (WYFFOS). The path from prime focus to the spectrograph consists of a prism, fibre button, 26 metres of fibre, finger, microlens and the facet block.

At the end of July 2001, a major upgrade of the instrument was performed by successfully installing the new Small Fibre Module of AF2. With the new fibres, AF2 can presently observe up to 150 science targets over a field of 1 degree diameter (with an unvignetted field of 40 arcminutes). Each of the 150 science fibres has a diameter of 1.6 arcsec (90 micron), and runs without connectors from AF2 to WYFFOS. The fibres are high-content OH fused silica made by Polymicro.

The small fibres replace the Large Fibre (2.7 arcsec diameter) Module,