



AODP

Adaptive
Optics
Development
Program

NOAO Annual Project Report

for

July 2010 – June 2011

Prepared for:
National Science Foundation
Scientific Program Order No. 6 (AST-0336888) is Awarded
Pursuant to Cooperative Agreement No. AST-0132798, Article VII

Management Activities and Findings

The Adaptive Optics Development Program involves the following sub-awards that have been continued under no-cost extensions to allow for their completion. Activity and findings noted here cover the time since the last report (1 April 2010).

Sub-Award No. C33002T: “Development of the Next Generation Optical Detectors for Wavefront Sensing,” California Association for Research in Astronomy

During the reporting year, the project was granted a further no-cost extension to 31 March 2011 to allow additional time for the wafer run for manufacturing of the final CCDs to be completed.

As reported last year, the California Association for Research in Astronomy (CARA) formed a collaboration with the Starfire Optical Range (SOR) at Kirtland Air Force Base and with the Thirty Meter Telescope project (TMT) to share the cost of the wafer run. Because the wafer run is a collaborative effort, it will include a number of different device designs to serve the interests of all three partners. The designs to be fabricated follow:

- the 160 × 160 pixels, split-frame transfer format, incorporating all of the design improvements following prior runs;
- the 256 × 256 pixels, split-frame transfer format;
- the 1024 × 1024 imagers without the split-frame transfer format; and
- the Polar Coordinate detector prototype with 30 × 30 subapertures (724 active) and 32 video outputs.

CARA and its collaborators engaged the Massachusetts Institute of Technology/Lincoln Labs (MIT/LL) to carry out the wafer run. MIT/LL is using lithography masks designed for wafers with a diameter of 150 mm, which are modified from masks used for the initial production of prototype devices under this sub-award. However, MIT/LL is in the process of converting its production to 200-mm wafers, and this current run for the final devices will be the last with 150-mm wafers. The production has encountered several delays at MIT/LL due to this wafer size mismatch. There have also been other delays associated with the various modifications to the prototype design, and the reviews of those modifications.

As of the end of the reporting year, the wafer run was in progress and had completed about 80% of the operational steps needed to yield the first packaged CCDs. CARA and its collaborators hope to regain some lost time by testing different types of devices in parallel. SOR will carry out some of the testing, and the Laboratory for Adaptive Optics in Santa Cruz, California (on behalf of TMT) will test other devices from the wafer run. CARA and NOAO had agreed to an additional no-cost extension to 30 September 2011 to allow time for completion of the wafer run and subsequent testing. Execution of that no-cost extension was pending as the reporting year ended.

Sub-Award No. C33003T: “Pulsed Fiber Laser for Guide Stars,” Lawrence Livermore National Laboratory

NOAO received and accepted the final report on the project from Lawrence Livermore National Laboratory (LLNL) in April 2010. This report represented the last remaining deliverable due from LLNL. As all payments under this sub-award had already been disbursed, there were no further actions required of either party.

Sub-Award No. C33005T: “Compact Modular Scalable Versatile LGS Architecture for 8–100-m Telescopes,” Lockheed Martin Coherent Technologies

As the reporting year began, NOAO was awaiting a revised final report and final invoice from Lockheed Martin Coherent Technologies (LMCT). LMCT delivered and NOAO accepted the revised final report in April 2010. LMCT submitted the final invoice in May 2010, and NOAO promptly made the payment for that invoice. NOAO promptly closed this sub-award.

Journal Publications

None to report for this period.

Books or Other One-Time Publications

None to report for this period.

Contributions within Discipline

None to report for this period.

Contributions to Other Disciplines

None to report for this period.