

Call for SABOCA Science Verification

Summary

The Submillimetre APEX Bolometer Camera (SABOCA), a 39-channel bolometer array operating at $350\ \mu\text{m}$, will be commissioned on the APEX 12m telescope on Chajnantor in September 2008. ESO now invites short proposals for science verification from the ESO community. All observations will be performed in service mode by the local APEX staff. All proposals should be sent to cdebreuc@eso.org by noon CEST on Monday 15 September 2008. The proposals will be coordinated between the APEX partners. If you submit proposals to multiple partners, please clearly indicate in the proposal how much time you request from each partner.

Telescope and Instrument

APEX is a 12m submillimetre telescope situated at an altitude of 5107m on the Llano de Chajnantor in Chile, and is a collaboration between the MPIfR Bonn, the European Southern Observatory and the Onsala Space Observatory. More details on APEX can be found at <http://www.apex-telescope.org>. The ESO share of the APEX observations will be performed during night-time and morning (till 11am local time), in service mode, by APEX and ESO staff. Only a limited amount of observing time will be available for the SABOCA science verification, scheduled for October 2008.

SABOCA is a bolometer array operating in the atmospheric window at $350\ \mu\text{m}$ (870 GHz). SABOCA consists of an array of 39 superconducting TES (Transition Edge Sensor) thermistors with SQUID (Superconducting Quantum Interference Device) amplification and multiplexing. Of these, 37 are arranged in a hexagonal layout consisting of a center channel and 3 concentric hexagons (one channel is known to be broken). Two additional bolometers, identical to the inner 37 but optically not coupled (called blind bolometers) were added to the layout at two diametral opposite positions, for monitoring purposes. The bolometers are designed to be operated at a temperature of about 300 mK, provided by a cryostat using liquid nitrogen and helium, in combination with a close-cycle helium-3 sorption cooler.

The APEX beam size at this wavelength is $7.7''$, and the total field of view for SABOCA is $90''$. The array is undersampled on the sky; the separation between channels is twice the beam size ($15''$). The default observing mode is fast scanning in order to modulate the source signal. All scan modes used for LABOCA will also be offered with SABOCA. This includes on-the-fly mapping, spiral, raster spiral and circular patterns in the telescope or astronomical coordinate system. An observing mode for point source photometry, possibly using the wobbler, is being developed. However, this mode is not yet offered for the science verification phase.

Short science verification proposals are invited from the community. Exposure time estimates should assume a noise equivalent flux density (NEFD) = $1\ \text{Jy s}^{1/2}$, 36 working bolometers and a 90% overhead for slewing, pointing, focus and calibrations.

Science Verification Proposals

The purpose of Science Verification is to demonstrate the capabilities of the facility and its instruments to the wider community and to gather feedback from users to improve the performance. Proposals should be submitted as a single PDF file. They should contain as a minimum the following information:

- Principal Investigator and co-Investigators (+ institute and PI email)
- ESO User Portal ID of the PI
- Abstract
- Scientific Justification (guideline: up to 1 page plus figures)

- Source list (RA, DEC, **only in J2000**).
- Observing time estimate, **including a 90% overhead**.

Proposals will be assessed on grounds of scientific merit, potential to demonstrate the range of telescope and instrument capabilities and feasibility with the current configuration and limited amount of available observing time (guideline: up to 10 hours including overheads). The data will be made publicly available through the ESO archive as soon as they have been validated. Successful proposers are required to work closely with the APEX team and to provide rapid feedback on the data.

Deadline for submission of Science Verification proposals

All proposals should be sent to [cdebreuc\[AT\]eso.org](mailto:cdebreuc[AT]eso.org) by noon CEST on Monday 15 September 2008.

Regular SABOCA proposals

ESO will also offer SABOCA in the period 83 call for proposals, for observations between April and September 2009. This offer will be conditional to successful on-sky commissioning of the instrument. Any project significantly exceeding 10 hours of observing time should be submitted as a regular proposal.