Final project report

Project ID	2002 - 7.10
Title	OASI/COCHISE
Principal investigator	Prof. Giorgio Dall'Oglio
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Duration	2 years
Assigned funding	33.570,00€ (2002)

Activities and results

During the Italian expeditions in Antarctica from 2000 to 2004, from the OASI telescope have been carried out some observations of HII Regions: they represent the final evolutionary stages of the birth of stars (or a cluster of stars) of spectral type O or B. At present, few observations of HII Regions in the millimetric are available, mainly because of technical difficulties in executing the measures in such band.

The measures are absolutely original; in collaboration with Rod Davies of the Jodrell Bank Observatory the flux density of two observed regions has been obtained. Currently the analysis of other five regions observed during the expeditions 2003-2004 and 2004-2005 is in progress. These results have been submitted to the Meeting of group STAR (Solar-Terrestrial and Astrophysical Research) in the course of XXVII Meeting of the SCAR held in Shanghai in July 2002; to the Conference "The scientific Outlook for Astronomy and Astrophysics Research at the Concordia Station" held in Capri from the 28 to the 30 April 2003; to the session "Astronomy in Antarctica" of the International Astronomical Union - General Assemblyheld in Sydney from the 13 to the 26 July 2003 and to the Meeting "Dome C Astronomy and Astrophysics" held in Toulouse in June 2004 Following the same research line, a wide international collaboration (comprising institutions in the USA, England, Australia and obviously in Italy) has been sped up for the realization of one instrument dedicated to the measure of the polarized component of the CBR, to be installed at Dome Concordia in a near future: COCHISE (Cosmological Observations at Concordia with Highsensitivity Instrument for Sources Extraction). The instrument to install at Dome C is a 2.6 meters diameter Cassegrain submillimetric telescope, very similar to the OASI telescope already installed at MZS, and its deployment is scheduled for the Antarctic summer 2006-2007. Common elements between the two telescopes can be used to test new instrumentation at OASI before employing them at Dome C. It will be possible to accomodate detectors for observations of polarized radiation (of cosmological origin and from diffuse and point-like sources). The secondary mirror will be therefore supported by a cone of Styrofoam (almost transparent to millimetric radiation), according to an idea originally developed in our team. The first detector to install at the focal plane of this telescope is a multichannel single-pixel bolometric

detector operating at 300 mK.

Products

A – papers in scientific magazines

- 1. Astronomy & Astrophysics, 2005, 492, 2, 595-600
- 2. The Astrophysical Journal, 2004, vol.610, pp. 625-634,
- 3. New Astronomy Reviews, 2003, vol.47, pp. 1033-1046,
- 4. Cryogenics, 2003, vol. 43, pp. 659-662,

B – book chapters

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C - proceedings of international conferences

- 1. ASP Conf. Proc, vol. 13, 2003
- 2. EAS Publications Series, Volume 14, pp.69-73, 2005

D – proceedings of national meetings and conferences

- 1. Mem.S.A.It., 2, 38, 2003.
- 2. Mem.S.A.It., 2, 50, 2003

E – thematic maps

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F – patents, prototypes and data bases

G - exhibits, organization of conferences, editing and similar

H - formation (PhD thesis, research fellowships, etc.)

1. PhD Thesis Dr. Lucia Sabbatini Title" Millimetric observations of Southern compact HII regions with the OASI telescope and preparation of COCHISE telescope for cosmological observations"

Research units

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Date:

Notes