Final project report

Project ID 2004/7.08
Title The Italian Antarctic Infrared Telescope
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Duration 3 years
Assigned funding 200.000,00 Euro

Activities and results

A) ANTARCTIC ACTIVITIES

In the periods covered by the three original PEAs and in the following years, up to now (February 2011), we have participated to various campaigns in Dome C.
1) Summer campaign 2005-2006 (Runa Briguglio)
2) Summer campaign 2006-2007 (Runa Briguglio)
3) Winter campaign 2007 (Runa Bruguglio)
4) Summer campaign 2007-2008 (Lucia Sabbatini), in collaboration with the Cochise experiment
5) Winter campaign 2008, (Lucia Sabbatini), in collaboration with the Cochise experiment
6) Summer campaign 2008-2009 (Alberto Mancini and Antonfranco Piluso)
7) Summer campaign 2009-2010 (Alberto Mancini and Antonfranco Piluso)
8) Recently: summer campaign 2010-2011 (Antonfranco Piluso and Jean Marc Christille)

B) RESULTS

In the first phase (up to 2007) we completed the IRAIT telescope and sent it to DDU, where it was stocked till the campaign 2007-2008, when it was transported to Dome C.
In this first phase activities at Dome C have concerned the intstallation and operation of the mock-up telescope Small-IRAIT (25cm reflector, CCD camera). It observed variable objects in the southern sky and measured the atmospheric extinction. All the results have been published.
In the mean time, logistic preparatory operations were carried out by PNRA personnel.
In the second phase (2008-2011) we mounted the telescope at Dome C, in collaboration with CEA personnel. IRAIT is now installed in the astronomical area, near COCHISE, and the Astrophysics laboratory has been built close to the two experiments. The mounting has concerned first mechanical parts and the pipelines for criocooling, then (this summer just ended) the optics and various service systems for the dome. All preparatory works for the AMICA camera have been also done.
In this last campaign most of the materials for the AMICA camera have been transported to Dome C and several tests of operation of electronics in Antarctic conditions have been done.

C) COMPLETION OF THE TELESCOPE

IN JANUARY, 2011, BEFORE THE CLOSURE OF THE CAMPAIGN, IRAIT (EQUIPPED WITH A CCD CAMERA) HAS OBSERVED SUCCESSFULLY ITS FIRST STAR, CANOPUS.

The development phase is thus completed. Next year will see the beginning of the scientific program, with the deployment of the last components of the AMICA camera, its mounting and its start of operations.
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Products

A – papers in scientific magazines
2. Briguglio et al. 2008, Small IRAIT: telescope operations during the polar night, SPIE 7016, 15

B – book chapters

C - proceedings of international conferences
1. Guandalini, R., Palmerini, S., Busso, M. 2007, AIPC 1001 (editors)
4. Guandalini, R., Tosti, G.; Busso, M. 2007, IRAIT (Science to be done with...)
6. Colomé, J. et al. 2007, Design and construction of the moving optical systems of IRAIT. Hi of A 14, 702
7. Riva, A. et al. 2007, AMICA the infrared eye at Dome C, Hi of A. 14, 700
10. Riva, A. et al. 2006, AMICA - The Infrared Eye At Dome C, IAUSS 7, 9
11. Dolci, M. et al., 2007, AMICA (Antarctic Multiband Infrared CAmera) project, SPIE 6267, 48
13. Valentini, G. et al. 2006, New filters for NIR-MIR astronomy from Dome C: the case of AMICA, SPIE 6267, 40
15. Dolci, M. 2005, AMICA: the Antarctic Mid-Infrared Camera for the IRAIT telescope, EAS 14, 337
22. Guandalini, R., Tosti, G. and Busso, M. 2008, IRAIT (Science to be done with...) EAS 33, 243
23. di Varano et al. 2008, Main tasks for IRAIT installation at Dome C, EAS33, 279

D – proceedings of national meetings and conferences

E – thematic maps

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F – patents, prototypes and data bases
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G – exhibits, organization of conferences, editing and similar
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H - formation (PhD thesis, research fellowships, etc.)
1. 2 years of research fellowship (Alberto Mancini)
2. 2 PHD dissertations (Alberto Mancini and Runa Briguglio)
3. 1 Master thesis (Jean Marc Christille)

Research units

In Italy:
1. (For the Telescope). Department of Physics, University of Perugia
2. (For the IR Camera). INAF, Observatory of Teramo

Abroad:
1. (For the external moving optics) University of Granada (P.I. C. Abia)
   (This is a technological & scientific collaboration, based on a MoU, in which Granada has the commitment to represent the whole Spanish Astronomical Community
2. For the de-rotation of cables and other technical issues, and for a test in sub-mm with the CAMISTIC bolometer): CEA Saclay (PI Gilles Durand)

Date: February 14, 2011

Notes