

Programma Nazionale di Ricerche in Antartide (PNRA)

Final project report

Project ID: 2002/7.11
Title: BaR-SPOrt

Principal investigator: Dott. Stefano Cortiglioni
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Duration: 2 years
Assigned funding: 22.087,50 €

Activities and results

The main activities, according to the proposal, were related to:

- Study and development of specific sensors suitable for LDB operations in Antarctic regions
- Update of the experiment control electronics to (polar) LDB requirements
- Update of the experiment mechanics to (polar) LDB requirements
- Study and development of observational methods suitable for (polar) LDB
- Ground observations of sky regions to be selected for deep survey of Cosmic Background Polarization onboard LDB

In addition, we have realized a new Telemetry&Telecommand module able to manage balloon and ground experiments in Polar regions. It works by using the Iridium satellite communication system and can be used everywhere without any special infrastructures.

Products

A – papers in scientific magazines

1. G. Bernardi, E. Carretti, R.J. Sault, S. Cortiglioni, S. Poppi, 1.4 GHz polarimetric observations of the two fields imaged by the DASI experiment MNRAS submitted, 00, 000-000 (2006)
2. McConnell D., Carretti E., Subrahmanyam R., A novel technique for wide-field polarimetry with a radiotelescope array AJ, 131, 648-653 (2006)
3. Carretti E., Poppi S., Reich W., Reich P., Fuerst E., Bernardi G., Cortiglioni C., Sbarra C., Deep 1.4-GHz observations of diffuse polarized emission MNRAS, in press, 000-000 (2006)
4. G. Bernardi, E. Carretti, R. Fabbri, C. Sbarra, S. Cortiglioni, The synchrotron foreground and CMB temperature-polarization cross MNRAS Letters, 364, L5-L7 (2005)
5. E. Carretti, D. McConnell, N.M. McClure-Griffiths, G. Bernardi, S. Cortiglioni, S. Poppi, Polarized Diffuse Emission at 2.3 GHz in a High Galactic Latitude Area MNRAS Letters, 360, L10-L14 (2005)
6. E. Carretti, G. Bernardi, R.J. Sault, S. Cortiglioni, S. Poppi, High Galactic latitude polarized emission at 1.4 GHz and implications for cosmic microwave background observations MNRAS, 358, 1-12 (2005)
7. E. Carretti, S. Cortiglioni, C. Sbarra, R. Tascone, Antenna Instrumental Polarization and its Effects on E- and B-Modes for CMBP Observations A&A, 420, 437-445 (2004)
8. G. Bernardi, E. Carretti, R. Fabbri, C. Sbarra, S. Poppi, S. Cortiglioni, J.L. Jonas., A polarized synchrotron template for CMBP experiments after WMAP data MNRAS, 351, 436 (2004)

B – book chapters

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C - proceedings of international conferences

1. The Magnetized Interstellar Medium, Proceedings of the conference, held in Antalya, Turkey, September 8 - 12, 2003, Eds: B. Uyaniker, W. Reich, and R. Wielebinski, Copernicus GmbH, Katlenburg-Lindau, 6, p. 207-212 (2004)

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2. Bernardi G., Carretti E., Fabbri R., Sbarra C., Poppi S., Cortiglioni S. A Template of Galactic Polarized Synchrotron Emission in the Frame of CMBP Experiments
3. Carretti E., Bernardi G., Cortiglioni S., Sault R.J., Kesteven M.J., Poppi S. Observations in the BOOMERanG Field at 1.4 GHz The Magnetized Intertellar Medium, 00, 000-000 (2004)
4. Carretti E., Cortiglioni S., Macculi C., Sbarra C., Ventura G., Monari J., Poloni M., Poppi S., Natale V., Nesti R., Baralis M., Peverini O.A., Tascone R., Virone G., Sironi G., Zannoni M. High Stability and Sensitivity Correlation Polarimeters for CMB Polarization Measurements Millimeter and Submillimeter Detectors for Astronomy II, SPIE Conf. Proc., 5498, 725-734 (2004)
5. C. Macculi, S. Cortiglioni, E. Carretti, M. Zannoni, O.A. Peverini, R. Tascone, A. Olivieri Optical properties of dielectrics in the mm range: the case of spurious polarization induced by a vacuum window. SPIE, Millimeter and Submillimeter Detectors for Astronomy II, SPIE Symposium 2004, June 23th-25th, 2004, Glasgow, Scotland, 5498, 744-755 (2004)
6. M. Zannoni, C.Macculi, E. Carretti, S. Cortiglioni, G.Ventura, J. Monari, M. Poloni, S.Poppi Thermal design and performance evaluation of the BaR-SPOrt cryostat SPIE, Millimeter and Submillimeter Detectors for Astronomy II, SPIE Symposium 2004, June 23th-25th, 2004, Glasgow, Scotland, 5498, 735-743 (2004)

D – proceedings of national meetings and conferences

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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.)

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Research units

- INAF-IASF Bologna
- INAF-IASF Milano
- INAF-IASF Palermo
- INAF-IRA Bologna
- CNR-IEIIT Torino
- CNR-IFAC Firenze
- Università di Milano-Bicocca
- Università di Firenze
- Università di Roma-La Sapienza

Date: 27/03/2009

Notes