

Monthly Progress Report
SPIRE Test Facility and Scientific Support

Contract Number: 9F007-020251/001/SR
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Period: April 2004

Part 1

1. Is the project on schedule? **No.**

The last quarterly report mentioned a delay in the delivery of flight hardware until mid-summer 2004. During the recent Co-Investigator meeting it was confirmed that first data from the SPIRE imaging FTS will not be available until November 2004. Although the project is currently on schedule, the delay in delivery of SPIRE hardware is beyond our control and causes serious problems since two key Canadian staff are funded only through December 2004. We are currently preparing a proposal to the CSA to address this issue.

2. Is the project within budget? **Yes.**
3. Is the project free of any areas of concern in which the assistance or guidance of Canada may be required? **No (see above).**

Travel in April 2004

Trevor Fulton, the SPIRE software engineer, attended the kick-off workshop for the software of the SPIRE Interactive Analysis at Imperial College, London on April 6/7. A respective travel report was submitted.

David Naylor, as SPIRE Co-Investigator, and the SPIRE Associate Scientists James Di Francesco, Peter Martin, Douglas Scott, and Christine Wilson attended the SPIRE Science Team meeting at Imperial College, London from April 14 – 16. A respective travel report was submitted.

Part 2

Task 3.1: Provide SPIRE Test Facility FTS

- The Test Facility FTS has been delivered to the Rutherford Appleton Laboratory (RAL) in August 2003.
- The development of the control software for the imaging FTS has started. The goal is to provide sample test data for the development of the SPIRE software packages before data will become available from the SPIRE flight model.
- The weather station designed and built for the SPIRE test facility at RAL experienced intermittent problems with erroneous readings. The system was subsequently returned to Lethbridge where analysis revealed that the problems could be traced to the on-board power regulator and one of the humidity sensors. The defective components have been replaced and further long-term tests are currently under way. Delivery to RAL is scheduled for mid-May.

Task 3.2: Provide SPIRE Data Analysis Software

- Four deglitching schemes were implemented and tested on data from the BLAST project that show the signature of cosmic ray hits. These routines were used in other missions. A combination of two of these schemes will be put forward as a first order deglitching step in the Interactive Analysis. The respective technical note will be updated to include detailed results.

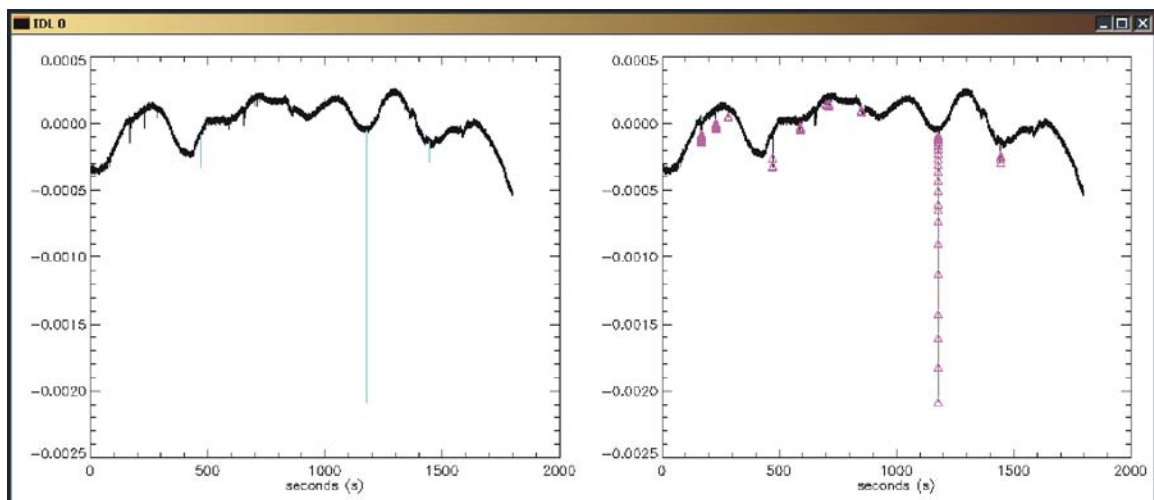


Figure 1: A sample result from an iterative deglitching scheme applied to BLAST data

- A tentative schedule for the collaboration with the Laboratoire d'Astrophysique de Marseille was defined:

May 15	Data Product Definition
May 15	Spectrometer Test Data
May 31	Flow diagram for work package FT, v1.0
May 31	Pre- and post-ambls (with extensive data checking)
June/July	Implement and benchmark NFFT vs. re-grid & FFT (in C)
June/July	Implement and benchmark deglitching routines (in IDL)
July/August	Implement and benchmark phasecorrection LAM vs. UoL (in IDL)
Sep/Oct	Implementation in Java
November (and onwards)	Start testing of pipeline with PFM data, implement changes, finalize tasks

This schedule shows the impact of the delay in the delivery of the SPIRE imaging FTS, as noted in Part 1. The initial plan called for the FTS to be available for tests in January 2004. The slippage to November 2004 will require an amendment to the current contract in order for us to complete our work packages.

- The technical note on the work package Fourier Transformation was revised based on the feedback provided by several researchers.

Task 3.3: Canadian SPIRE Team Support

- The next SPIRE Science Team Meeting will take place at RAL, UK, September 28 – 30, 2004.

Task 3.4: SPIRE ITT and ICC Support

- Locke Spencer, a graduate student from the University of Lethbridge and currently deployed at RAL, and Samuel Ronayette, Canadian member of the SPIRE Instrument Test Team (ITT) at RAL, are involved in the reduction of test data. The SPIRE Data Analysis Group (SDAG) is meeting twice per month to present and discuss any results available from the test campaign. Most recently, Locke Spencer has prepared a cross-pixel comparison of the spectral responsivity.
- Asier Abreu, the Canadian member of the SPIRE ICC at RAL, and Samuel are involved in tests to quantify the spectral nature of the radiant background of the SPIRE test facility. They currently prepare the control script for a step and integrate observation and a structure to position the detector within the cryostat.
- John Lindner, the second graduate student from the University of Lethbridge currently deployed at RAL, is preparing software to simulate the SPIRE instrument. The software modules will provide simulated data from the spectrometer.

Task 3.6: Public Outreach Program

- The adaptation of the Memory board game that illustrates infrared radiation and its uses to study astronomical sources is currently used for the University of Lethbridge Science Camps 'Destination Exploration'. It will reach about 170 students from schools in and around Lethbridge.