

UK Astronomy Technology Centre

Monthly Project Report

SPIRE-ATC-REP-001273

Project: SPIRE

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1. Summary - BSM

Subsystem Progress This Month

Cryostat tests started. Mechanism functions cold and basic sensor checks look good. Random response FEA model built, mass audit and first natural frequency check underway. Development model manufacture in progress: all units near completion. Cryo-upscreen manufacture started. Brazed CuBe pivots (chop axis type) order due on Apr.02. Costs and timescales for Warm/Cold vibration tests requested.

Engineering Activities

Design Description updated as v4.1 and will be issued this week. Mock up of on-BSM harness runs performed. Wiring harness mocked up, and some serious space envelope issues identified. Significant effort placed into writing BSM test plan.

Design Changes

ECR issued to close out rotation of harness connectors by 90°. Re-design of mounts to accommodate Zeiss motors under way, but problem identified: The Zeiss motors are 4.5mm wider than the MPIA prototypes, and re-design of the Jiggle frame, chop axis, structure and motor mounts is all required. Although the size changes remain small this is never the less a complete up-issue of the BSM assembly (note interfaces are NOT affected). Careful mechanical routing of the on-BSM wiring will also be required, and some internal screening may need to be carefully re-thought. We are folding both these changes together, the resulting unit being the DM 'Mk2'.

PA/QA Activities

Action plan for new lab cleanliness improvements being prepared. Two components in workshop have NCRs..

2. SOFT analysis

Successes

- IBDR presentation issued.
- successful cooldown to 4K baseplate/20K jiggle frame

Opportunities

- BSM structure may be salvageable as an interim DM pending 'DM mk2', or as OGSE.

Failures

- A small error on Jiggle frame DM will be accepted at NCR review, but BSM structure will need to be remade as jiggle bore is out of alignment Zeiss motors larger than available space.
- Full checks on repeatability/linearity in dewar not possible due to problem with multiple reflections on cryostat window. high efficiency anti-reflection coating window ordered and will do manual checks on repeatability using alignment scope (requires first re-fitting 2 axis prototype with a diamond turned mirror)
- Project cost estimate updates delayed. STM specific ICD is required, running late.

Threats

- Full cost estimate required to see if budget OK
- Representative (ESA type) wire needed for DM harness design (RAL have assisted. No exact wire stock available, but Doug Griffin has sent sample of similar wire)
- Dev.Plan (v5.1) and Schedule assessed against major milestone list. SPIRE's STM cold vibration is now 3-4 months later than last schedule, which impacts the BSM because our qualification loads need to be confirmed by STM before we can do QM shake and life tests. Options are to do BSM qual without STM loads (and deliver on time), or take a 4 month slip to BSM PFM delivery. Revised plan based on delivery to time proposed, but risks higher - discussions with RAL underway on this.

3. Status of Project Milestones - as at 26.Feb.02

Milestone	Baseline	Scheduled	Actual	Change
Report on sensor stability to LAM	07 Jul 00	21 Jun 01	30.Jul.01	
Prototype Detail design release	24 Jan 01	30 May 01	30May01	
Update ICD structure	24 Oct 00	13 Jun 01	13 Jun 01	
20K test dewar available	N/A	Apr.02		
SPIRE Intermediate Instrument Design Review (IIDR)	TBD	23-24Apr.01	23-24Apr.01	
Integrate Prototype (in place of DM 2) to LAM	30 Mar 01	Mar.02		
Internal ATC review	new	3 Jul 01	2.Jul.01	
Detailed Design Review	30 Jan 01	31 Jul 01	30.Jul.01	
DM release for manufacture	Oct.01	Nov.01	Dec.01	
2 axis prototyping at ATC complete	N/A	Mar.02		+2weeks
SPIRE IBDR	N/A	Mar.02		
DM tests complete	N/A	30.Apr 02	5.May.02	+1 week
BSM STM del'y to RAL	01 Feb 00	01 Jul 02		
BSM CQM delivery to LAM	N/A	Jul.02		
BSM CQM del'y to RAL	13 Mar 02	Under review		

4. Summary - ICC

An occasional report on the ICC follows.

Jason Stevens has been supporting Gillian Wright's ICC role, and is attending two day meetings at Imperial College on a monthly basis (a continuation of the role played when at MSSSL). At these IDT meetings we have been writing usecases for the SPIRE ICC (Instrument Control Centre). Jason's major effort has been to write and review (with two others) the IA (Interactive Analysis) usecases for the photometer data reduction pipeline - the photometer is very similar in design to SCUBA.

We have recently (with some help from Alan Bridger) converted these usecases into workpackages with costings (%fte). This process is ongoing but a first estimate was required urgently for the SIP (Science Implementation Plan). It is likely that the SPIRE ICC will be asking PPARC for more money to fund the software effort. If approved, there may be a case for a post at the ATC

A review of the SPIRE ICC is scheduled for ~ week 1 of May.02. Jason is also a member of the IA commonality working group which met at ESTEC in October to make recommendations on the amount of software that is common to all of the instruments on HERSCHEL (i.e SPIRE - including the FTS - PACS and HIFI). The outcome of this meeting is pending.