

Integrating Space Radiation Sensing Infrastructures (ISRSI)

Programme and Goals

- **Original ISRSI I3 activity (actually “I2” activity)**
 - **Coordinated Action (Network)**
 - **Joint Research Activities**
- **Establish stable links among a targeted number of leading groups in the fields of experimental astronomy/astrophysics and particle physics. The main theme of these activities was space related.**
- **Focus on:**
 - **Photons**
 - **Low energy gamma rays**
 - **Low energy particles**
 - **Radiation effects**
 - **Databases and modelling tools**
- **Exploit the extraordinary amount of knowledge disseminated around Europe in these fields.**
- **Networking activity - catalyst for the larger European research community involved in the development of space based radiation detectors, radiation environment modelling and radiation data base organisation.**

Programme and Goals

- **JRA-1 planned to develop and enhance radiation detector technology:**

- Hybrid detectors for broad band X-ray spectroscopy,
- Compound semiconductor detectors for the infrared,
- Cryogenic arrays for X ray detection and far infrared (mm) wavelengths

- **JRA-2 planned to address the problem of the near Earth radiation environment.**

- A new global radiation environment model was to be developed using available datasets. Through standard interfaces data would be accessed to develop empirical and statistical models.

- Advanced modelling of belts based on wave dynamics was to be pursued.

- These data and models would be used as a starting point to design and build a prototype of a new generation 4π detector devoted to the high precision measurement of the radiation at high count rates.

“Old” ISRSI Consortium

▪Countries

Network

Belgium
Bulgaria
Finland
France
Greece
Hungary
Italy
Netherlands
Portugal
Romania
Russia
Slovakia
Spain
Sweden
Switzerland
UK

JRA1

Finland
France
Greece

Italy
Netherlands

UK

JRA2

Belgium
Bulgaria

Hungary
Italy

Romania
Russia
Slovakia

Sweden

UK

ISRSI Redefined

- **General view of the proposal, network, management/organisation and certain elements of JRA1 were positive. Proposal above threshold but unfunded.**

- **ISRSI consortium has decided to resubmit the proposal with modifications - as it is the proposal will not be accepted for the following reasons:**
 - **No trans national access component.**
 - **Stronger commitment from ESA.**
 - **JRAs must be more focused with a clear goal on deliverable infrastructure.**
 - **More streamlined coordination and management.**

- 1. JRA1 – High speed electronics (science case, work packages, costs)**
- 2. JRA2 - Pixel Arrays (science case, work packages, costs)**
- 3. JRA3 and 4 – Cryogenic detectors (science case, work packages, costs)**
- 4. JRA5 – Si Photomultipliers (science case, work packages, costs)**
- 5. Transnational Access (facilities/services, integration with goals, costs)**
- 6. Networking and coordination (working groups, costs, allocation of funds)**

WG1 Innovative Solid State detectors for ESA Cosmic Visions (Reza Ansari)
WG2 Innovative Cryogenic detectors for ESA Cosmic Visions (ESA TBD)
WG3 Benchmarking and new infrastructures
WG4 European Strategy on Space Research (Stavros Katsanevas)
WG5 Technology Transfer and Cross Disciplinary...
WG6 Space Radiation Environment (TBD : LPCE, CESR ?)
WG7 Fault Tolerant Software and Hardware
WG8 Mechanics and Systems
WG9 Communication and Outreach
WG10 Experimental and Testing infrastructures

- **To address these points the ISRSI consortium has agreed to use the ESA Cosmic Visions goals as a guide to redefine the proposal and JRA goals**
 - **Primarily for high resolution photon spectroscopy/imaging for astrophysical applications in space, and possibly particle detection (electrons, neutrons, gamma rays etc...) in a planetary science context.**
 - **Infrastructure - detectors, laboratories etc...**
 - **The old JRA1 may be expanded into smaller more focused JRAs, JRA2 would be scrapped.**

ISRSI Trans National Access

- **Trans national access component will be: access to the technology developed for specific experiments or access to the facilities involved in the development (hardware, expertise etc...) - enabling step.**
 - **Promote interaction between members of the consortium and facilities.**
 - **Technology transfer between facilities.**
 - **Access to small institutional laboratories - resulting in growth of the laboratories.**
 - **Allow research organisations in the consortium to access technology and branch into new research areas, something which is not possible due to lack of expertise or funds.**

Final Points

- ISRSI consortium believe that a small focused proposal based on the ESA Cosmic Vision is practicable and has a good chance of achieving its goals.
- Organisational and networking structure exists but needs refining.
- Basic proposal exists but needs more focus on JRA. Referees comments will be very useful in this new initiative.
- ISRSI consortium at this stage do not endorse a fusion with other proposals.
- DISCUSSION