ARIADNA NEWSLETTER
MARCH 2005

http://www.esa.int/ariadna

ARIADNA NEWS: STUDY TEAMS OF CALL FOR PROPOSALS 04/01 SELECTED

We are glad to announce that the study teams for the second Ariadna Call for Proposals 04/01 are now selected. While some of the negotiation meetings have already taken place, the rest will follow in the coming days, allowing all the selected teams to start working in these challenging topics:

04/1201 Lorentz-invariant description of the Feigel process for the extraction of momentum from the vacuum - Awarded to CNRS/Grenoble and University of Cologne

04/1302 The relativistic double-embedding problem for the Solar system – Awarded to University of Freiburg

04/2301 Biomass-based Fuel Cells for Manned Space Exploration – Awarded to Helsinki University and Wageningen University of Technology

04/3101 Helicon Double Layer Thruster Concept for High Power NEP Missions – Awarded to Ecole Polytechnique/CNRS

04/3102 Assessment of Open Magnetic Fusion for Space Propulsion - University of Rome "La Sapienza"

04/4104 A search for invariant relative satellite motion - University of Reading and University of Rome "La Sapienza"

04/4105 Assessing the accuracy of interval arithmetic estimates in space flight mechanics – Awarded to Politecnico di Milano

04/6201 Mechanisms – Biologically inspired joints for innovative articulations concepts – Awarded to Delft University of Technology and University of Bologna

This has been a very successful Call for Proposals, where we have seen increased the number of universities applying and received many more proposals than the previous call. We invite you all to let us know your comments and suggestions on how Ariadna could be improved, as they will provide us information on how Ariadna could meet the needs of the Academic world.

A new round of Call for Proposals is expected to take place later on this year, we will keep you all informed.

GOT SOMETHING TO TALK ABOUT?

The Advanced Concepts Team is always looking for new ways of cooperating with universities so both the space sector and the academic world can benefit from this interaction. In this line, we have been periodically hosting invited talks in the European Research and Technology Centre (ESTEC) in The Netherlands, that allow academicians to tell us what are they working on. This “inspirational talks” are attended by the members of the Advanced Concepts Team and interested ESA staff. If you are working in a University Department on any exciting topic related to advanced space technology or with a potential application to it, we would like to hear from you. We are particularly interested in topics that fall outside of traditional space technology research domains. Please contact us at act@esa.int and tell us about it, we may invite you to come and discuss your work with us.

ESA INVITATIONS TO TENDER

Periodically the European Space Agency issues Invitations To Tender (ITTs) on a broad range of domains and activity types, ranging from scientific and technical studies, to technology development activities or even basic infrastructure support services. A list of both the intended and currently open ITTs can be accessed at http://emits.esa.int/. Below a selection of those that could be of particular relevance to universities and academic researcher is provided:

Use Of Bi-Static Microwave Measurements For Earth Observation
The objective of this study is to investigate the potential of microwave bi-static measurements for the extraction of bio-geophysical parameters. In this exploratory activity, it is planned to scan a wider range of bi-static configurations as well as to consider a large panel of bio-geophysical parameters (land, sea, ice). The output of this study shall be an overview of the most interesting bi-static configurations as well as a rough quantification of their added value - if any - in terms of parameter retrieval.
Tender Status: Issued (closing date 06/04/2005).
Price Range: 100-200 kEuro. More Information at:
http://emits.esa.int/emits/owa/emits_online.showao?typ1=2811&user=Anonymous

Integrated Multi-Range Rendezvous Control System
The main objective of the study is to develop, simulate and bread boarding an integrated multi-range rendezvous control system. The architecture will be defined for two mission scenarios: in-orbit servicing and sample return in Earth environment.

European Space Agency
Agence Spatiale Européenne

ESTEC
ACT, DG-X, Keplerlaan 1 - 2201 AZ Noordwijk - The Netherlands
Tel. +31 (0)71 565 5174 - Fax +31 (0) 71 565 8018

Different algorithms will be used at different ranges from the target. For manoeuvre planning, it is foreseen to use a Lambert planner at long range with genetic algorithm optimization of start and transfer times. A Simplex planner with path constraints will be used at close range. Orbit measurements from relative and absolute sensors will be seamlessly integrated using an iterated, extended Kalman filter.
Tender Status: Intended. Price Range: 200-500 kEuro. More Information at:
http://emits.esa.int/emits/owa/emits_iitt.show_iitt?actref=04.1EC.01&user=Anonymous

New Concepts For Dual-Gridded Reflectors
Dual-gridded reflector antennas allow the combination of two apertures in almost the same room that would be occupied by only one normal reflector. This concept is extremely important due to the accommodation constraints of the platforms and lead to very high polarisation purity. Ku-band dual-gridded reflectors are widely used today on commercial satellites. This activity deals with the study of possible technological implementations of dual-gridded reflectors for telecommunications applications in Ka-band. New concept and materials are mandatory due to high transmission losses of the front shell when Ku-band technology is considered for Ka-band.
Tender Status: Intended. Price Range: 200-500 kEuro. More Information at:
http://emits.esa.int/emits/owa/emits_iitt.show_iitt?actref=04.1EE.12&user=Anonymous

Massively Parallel Processor Breadboarding
The demand for digital signal processing from on-board applications in earth observation, science and communication is continuously growing while the only available radiation hard DSP processor is today old technology and will disappear latest by 2007. It is not clear if there will be a follow on for this DSP as 32-bit DSP manufacturers are not numerous and are in general not interested in licensing their technology for a niche sector like space. The performance need of the applications lead today to a lot of ASIC developments for every new application in order to cope with the requirements. On the other hand FPGAs which provide flexibility are not able to deliver the needed performance. The objective of this activity is to demonstrate, that new flexible processor architectures are capable to fill the gap between ASICs and FPGAs with respect to required flexibility, performance and budgets.
Tender Status: Intended. Price Range: 200-500 kEuro. More Information at:
http://emits.esa.int/emits/owa/emits_iitt.show_iitt?actref=04.1ED.05&user=Anonymous

SPACE TECHNOLOGY CONFERENCES

This section contains information of conferences of relevance to advanced space technology and some of the studies we are conducting.

ALGORITMY 2005 Conference on Scientific Computing
13-18 March 2005, High Tatra Mountains, Podbanske, Slovakia.
http://www.math.sk/alg2005

Quantum Mechanics for Space
30 March – 01 April 2005, Châtillon, France.
http://qm-space.onera.fr/workshop.html

5th Symposium on Small Satellites for Earth Observation
04-08 April 2005, Berlin, Germany.
http://www.dlr.de/iaa.symp

4th European Conference on Space Debris
18-20 April 2005, European Space Operations Centre (ESOC), Darmstadt, Germany.
http://esamultimedia.esa.int/docs/4SDC-Preliminary_Announcement.doc

1st AIAA Multidisciplinary Design Optimization Specialist Conference
18-21 April 2005, Austin, TX, USA.
http://www.aiaa.org/content.cfm?pageid=230&lumeetingid=970

OTHER ESA NEWS

4 March 2005 Rosetta's First Earth Swing-By

15-25 April 2005 Launch of Soyuz to the ISS with ESA astronaut Roberto Vittori onboard

ARIADNA IN SHORT

With Ariadna, ESA intends to strengthen the bond between Academia and ESA by providing opportunities to work in partnerships and making up-to-date information available on on-going ESA studies and advanced space technology news relevant to the academic world. Check http://www.esa.int/ariadna for news or updates on coming Ariadna call for Proposals.