ARIADNA NEWSLETTER
SEPTEMBER 2006
http://www.esa.int/ariadna

ARIADNA NEWS: CALL FOR PROPOSALS 06/01 CLOSING ON FRIDAY SEPTEMBER 15TH.

These are the last days to submit your proposals! The first Ariadna call for 2006 in fact will be closed on Friday September 15th. Details of the call and how to submit a proposal are available at: - Ariadna open calls

Solicited Studies For CFP 06/01: -

06/1301 **The Gravitomagnetic London Moment**, Type of activity: Medium Study (4 months, 25 KEUR)

06/3101 **Advanced Injectors for Chemical Rockets Inspired by Ink-jet Printing Technology**, Type of activity: Medium Study (4 months, 25 KEUR)

06/3201 **Advanced Ceramic Fibers and Matrices: Hafnium Carbide Composites**, Type of activity: Medium Study (4 months, 25 KEUR)

06/4101 **Global Trajectory Optimisation: can We Prune the Solution Space when Considering deep Space Manoeuvres?**, Type of activity: Extended Study (6 months, 35 KEUR)

06/6201 **Attaching Mechanisms and Strategies Inspired by Spiders' legs**, Type of activity: Extended Study (6 months, 35 KEUR)

06/6301 **Bio-inspiration from Plants' Roots**, Type of activity: Medium Study (4 months, 25 KEUR)

06/9401 **Active Coating for Position and Attitude Control**, Type of activity: Medium Study (4 months, 25 KEUR)

06/9501 **Microstructured Radiators**, Type of activity: Short Study (2 months, 15 KEUR)

ACT CAREER OPPORTUNITIES

The ACT is currently looking for a post-doctoral research fellow in the field of:

- ISRU (In Situ Resources Utilisation)
- Nanotechnology
- Biomimetics

For more details on this position and how to apply, please visit: ACT opportunities

SPACE TECHNOLOGY NEWS

Periodically the European Space Agency issues Invitations To Tender (ITTs) on a broad range of subject areas 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, is an (incomplete) selection of those that could be of particular relevance to universities and academic researchers:

IMPACT ASSESSMENT OF SOLAR INDUCED VEGETATION FLUORESCENCE OBSERVATIONS FROM SPACE FOR IMPROVING DYNAMIC VEGETATION MODEL

It has been observed that an in-situ observation of the solar-induced fluorescence of vegetation allows estimating the terrestrial carbon sequestration by measuring and modelling the plant productivity. However, the fluorescence signal is weak and difficult to be observed from space. On the other hand, it has also been reported that the light-use by plant is correlated with the xanthophylls pigment cycle, which may be remotely observable by the use of the photochemical reflectance index (PRI), derived from high-spectral resolution sensors. This study is intended to analysis the use of PRI and its relationship with the fluorescence yield by using campaign (e.g. SIFLEX) and satellite (e.g. MERIS, CHRIS-PROBA) data.
Tender Status: Issued. Price Range: 100-200 KEUR. Responsible: Mr. ONGARO. Reference Nr: AO5229

KU BAND RECONFIGURABLE ANTENNAS FOR NEXT GENERATION SATELLITE SYSTEMS

The aim of the study is to perform a trade-off study on re-configurable antennas operating in receive for Ku-band telecommunication missions. The output will be a justified re-configurable antenna roadmap and a classification of the most promising concepts with regard to customer mission and payload requirements. On some representative mission scenarios, the various antenna concepts such as active phased arrays, Focal Array Fed Reflector, etc. will be analysed and compared both from a technical & economical viewpoint.
Tender Status: Issued. Price Range: 100-200 KEUR. Responsible: Mr. ELIA. Reference Nr: AO5176

RIGOROUS NUMERIC TECHNIQUES APPLIED TO MICROWAVE INTERACTION WITH NATURAL TARGET: VOLUME SCATTERING

The main objective of this activity is to review the validity of microwave interaction models with natural targets that induce volume interaction. This aims at assessing their limitations in terms of range

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of input parameters, quantifying their accuracy and - whenever possible - providing insight on possible improvements. The aim of the study is to assess the validity range of the simplified approaches, to implement a numerical test facility, to derive the validity range and the limitations of the current approximate models, and to propose possible improvements to the asymptotic solutions or to propose alternative solutions to obtain results closer to reality.
Tender Status: Issued. Price Range: 100-200 KEUR. Responsible: Mr. Roederer. Reference Nr: AO5189

SPACE SYSTEM REFERENCE MODEL
The engineering data is at the heart of the advanced system engineering concepts like simulation-based design. In order to allow for this approach to be successfully implemented, the simulation must be embedded in the design process, in a way that the design baseline can be translated automatically in an executable simulation. The purpose of the activity will be: review ongoing initiatives in ESA and industry; select appropriate technology for implementation of data model; define semantics and populate the data model for a typical spacecraft; and demonstrate that design baseline, simulation and engineering databases can be rendered consistent and generated from the same data model.
Tender Status: Issued. Price Range: 100-200 KEUR. Responsible: Mr. MIRO CARRETERO. Reference Nr: AO5199

DEVELOPMENT OF ADVANCED EP THRUSTER CHARACTERISATION DIAGNOSTICS
The objectives of the proposed activity are to develop and test Telemicroscopy and Thermographic diagnostic systems capable of being used for both Hall-effect thruster and Gridded ion engine systems operating with variable Isp and propellants. In addition to the diagnostics analysis techniques/software tools are also required for the interpretation of test data.
Tender Status: Issued. Price Range: 200-500 KEUR. Responsible: Mr. SACCOCCIA. Reference Nr: AO5103

ADVANCED PLANNING AND SCHEDULING INITIATIVE
The objective of this study is to bridge the gap between advanced planning and scheduling techniques and the spacecraft operations environment. Current ongoing mission -such as Mars Express - and upcoming missions - such as Venus Express - will provide all necessary input for the customisation and validation of modular functional prototypes integrated within a system able to simulate the operational environment. The involvement of at least three independent European research institutes will facilitate the injection of the latest developments in AI planning & scheduling. The output of the study will recommend a future approach in designing and implementing mission planning & scheduling systems for upcoming ESA missions.
Tender Status: Issued. Price Range: 200-500 KEUR. Responsible: Mr. ONGARO. Reference Nr: AO4965

CONFERENCES ANNOUNCEMENT

Please be reminded that the deadline for submission of contributions to the workshop "**Artificial Intelligence for Space Applications**" organized by the ACT at the IJCAI 2007 (IJCAI) is approaching. The workshop is intended to stimulate the discussion between the artificial intelligence and the space engineering communities and benefit both. The topics of interest for the workshop will include, but are not limited to: swarm intelligence, planning and scheduling, automated space system design, onboard situation awareness, spacecraft autonomy. For more information visit the conference website: ACT and IJCAI

From October 2nd to 5th ESA, DLR and CNES are organizing in ESTEC (Noordwijk, The Netherlands) the **3rd International Workshop on Astrodynamics Tools and Techniques.**
The workshop gives an overview of different tools and techniques in astrodynamics. In addition, specific astrodynamics problems are presented which can be solved using desktop tools and astrodynamics techniques for quick desktop calculations are also shown.
More information at: http://www.congrex.nl/06c30/

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.

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