Two Post-doc positions on Galileo available at the Royal Observatory of Belgium (Brussels)

The Royal Observatory of Belgium (ROB) opens 2 one-year post-doc positions for a research project on Galileo called GALOCAD.

Background

Since the sixties, the Royal Observatory of Belgium (http://www.observatoire.be) is involved in international research programs based on space geodetic techniques. In 1988, the ROB started a research program dedicated to the use of the Global Positioning System (GPS) for applications in Geodesy and in Geophysics. The use of GPS for high accuracy applications requires a careful modelling of all the error sources which can affect positions measured using GPS, in particular, atmospheric errors. This is the reason why a research project called "Effects of the Earth Atmosphere in Space Geodesy" has been created at ROB at the beginning of the nineties. The goal of this project is to assess and to mitigate atmospheric (tropospheric and ionospheric) effects on GNSS applications (http://www.gpsatm.oma.be). At the present time, a team of 5 scientist's and 1 technician is working on these topics.

In 2004, the Royal Observatory of Belgium has submitted a proposal called GALOCAD in reply to Galileo Joint Undertaking call 2423. This proposal has been recently selected.

GALOCAD stands for ***"Development of a Galileo Local Component for the nowcasting and forecasting of atmospheric disturbances affecting the integrity of high precision Galileo applications"***.

The GALOCAD project

At the present time, atmospheric variability due to the presence of small-scale structures in the neutral atmosphere water vapour or in the ionosphere Total Electron Content (TEC) can strongly affect the reliability of GNSS high accuracy real time applications. The concepts of reliability and integrity play a crucial role in the development of Galileo.
Small-scale structures in water vapour and in TEC can be monitored using GNSS measurements. Nevertheless, up to now, the "density" of available GNSS stations in Europe was not sufficient to make a detailed study of the "local behaviour" of these atmospheric (ionospheric and tropospheric) structures.
Since the end of 2003, Belgium is equipped with a network of 67 permanent GPS stations. The typical distance between the stations ranges from 7 to 25 km. The goal of our project is to use these data to perform a detailed study of atmospheric small-scale structures, to build a model of such representative small-scale activity, and to assess the influence of these structures on the reliability of Galileo precise positioning applications. In addition, the project will study the correlation which exists between small-scale ionospheric activity and geophysical parameters (like the local geomagnetic K index): the existence of a such correlation between small-scale structures and local K would allow to forecast the occurrence of degraded positioning conditions a few hours in advance based on K forecasts.
The objective is to use the results of these investigations to develop and validate a prototype Galileo Local Component for the nowcasting and the forecasting of the effect of atmospheric disturbances on the integrity high precision Galileo applications.

The project will start between June 01 and July 01 2006.

Profile

The ROB is looking for applicants having the following profiles :

General profile :

- Ph. D. in GNSS or in ionosphere physics or equivalent experience (to be demonstrated by relevant publications)
- speaking English fluently.
- able to write technical reports in English.
- extended experience in programming (in the frame of scientific applications)
- experience in data analysis, in particular, in statistical analysis of large amounts of data

Added value :

- experience in the mitigation of ionospheric or tropospheric effects affecting GNSS
- experience with the Bernese software
- experience in GNSS data processing for (real-time) high accuracy positioning (Real Time Kinematics, …)
- experience in real time ambiguity resolution (OTF, Lambda, …)
- experience in GNSS data processing for the reconstruction of ionospheric parameters (TEC) or tropospheric parameters (ZTD)
- experience in ionosphere physics or in meteorology

To apply for these positions, send a motivation letter and a full CV as soon as possible and before April 15 to :

Prof. René Warnant
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Avenue Circulaire, 3
B-1180 Brussels
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e-mail : R.Warnant@oma.be
Tel: +32-2-373 02 51

The CV (in English or French) will contain at least :

- the candidate's full coordinates
- the diplomas obtained
- a publication list in 4 categories : peer-reviewed in international journals, proceedings of international meetings, technical reports, others.
- a list of presentations in international meetings
- a list a present and past scientific activities (with reference to the publication list)
- a list of the different positions (jobs) since the beginning of the scientific career

The motivation letter (in English) will explain in how far the candidate scientific activities fits the requested profile (with reference to publications) and a list (including full coordinates) of at least 2 referees (from 2 different Institutions) who can give an advice on the candidate.