The Royal Belgian Institute for Space Aeronomy (Brussels) BIRA-IASB is looking for a

Postdoc (PhD in physics or chemistry) **(M/F)**

for a contract of 1 year and 4 months to work in the context of the ESC2RAD H2020 project "Enabling Smart Computations to study space RADiation effects" http://www.esc2rad.eu/. The postdoc will work on the modeling of space radiation (mainly protons and electrons) effects on spacecraft materials and/or biological molecules, both of high importance for the understanding of the radiation damage to devices and astronauts in Space missions. The study of radiation effects implies a multiscale modelling approach; in this project we will mainly focus on the first-stage induced effects, whose better understanding will likely help in improving the description of further stages of the processes linked to irradiation. The postdoc will work with a combination of first-principles approaches, such as real time Time Dependent DFT (TDDFT)/Ehrenfest Dynamics, for detailed studies on stopping mechanisms, and with Monte Carlo particle transport approaches, as implemented in Geant4, for general characteristics of the induced atomic cascades.

The position is in principle for a postdoc with maximum 2 years of experience after the PhD, but candidates with more experience can also apply (in this case the contract may last 1 year, though, as the salary is based on the level of seniority). The position is open in the Planetary Aeronomy group, whose activities are developing instruments and modelling tools for the studies of planets in the Solar System (main activity) and improving the modelling of space radiation effects for future Mars exploration, on both astronauts and spacecraft components (recently started activity). The postdoc will be hired at the SW11 level of the federal Belgian system.

Details on the project. The postdoc will have the opportunity to contribute in different manners, either with TDDFT/Ehrenfest Dynamics calculations or Monte Carlo particle transport Geant4-based calculations. Depending on her/his expertise and initiative, she/he will have the opportunity to focus more on radiation effects on materials (in particular, GaAs, GaInP2, and some perovskite solar cells, via TDDFT and Geant4) or on biological matter (nucleotides in water, via TDDFT).
The project is in collaboration with Prof. Emilio Artacho (University of Cambridge, UK, and nanoGUNE research centre, Spain), Prof. Jorge Kohanoff (Queen's University of Belfast, UK) and Prof. Fabrizio Cleri (University of Lille, France).

If you have any question please contact fabiana.dapieve@aeronomie.be

How to apply: Interested candidates should send their CV, list of publications, cover letter, and a list of contact references e-mails, with the reference **D43_Postdoc** in the title of the email, to the HR department via email (hr-ae@aeronomie.be) with fabiana.dapieve@aeronomie.be in copy at the latest for **6th of December 2019.**

Candidates are advised to apply as early as possible. Information on the institute can be found at www.bira-iasb.be

Required skills:
We are looking for highly motivated candidates with
- a PhD degree in physics/chemical physics/computational quantum chemistry
- expertise in DFT/ MD methods or in Monte Carlo particle transport (Geant4)

 good communication skills in English (oral, written);
 some expertise in scientific programming (fortran, C++, python, ...);
 ability to work independently and in a team;
 results-oriented attitude

Offer and benefits:
 possibility of acquiring a bonus for bilingualism (Dutch/French) and/or competency premium (via certified training);
 refund of cost for public transport between home and work and some compensation for using bicycle;
 diverse social and cultural advantages: museum card, hospitalization insurance, discounts via Fed + card ...;
 canteen;
 free childcare during the school holidays (July / August);
 flexible working hours in a 38-hour week;
 working in a green and pleasant environment