



# JOB OFFER

BIRA-IASB is looking for:

## Ph.D. Candidate in the area of magnetospheric loss processes (M/F/X)

**Start date: September, 2021**

In the framework of the PRODEX Cluster project (data analysis of the Cluster mission in the magnetosphere of the Earth) and the BRAIN-be 2.0 IPA (Impact of Planetary magnetisation on Atmospheric erosion) project, we are looking for a **PhD candidate holding a recent Master degree in Sciences or Engineering, for a total duration of 3 years, starting from 1 September 2021.**

### Division, context

The candidate will work in the Space Physics group of the Royal Belgian Institute for Space Aeronomy (BIRA-IASB). The Space Physics group studies the interactions of solar wind particles and solar radiation with solar system bodies. It has strong expertise in modelling the solar wind – magnetosphere – ionosphere coupling. It is involved in space missions, instrument development, data analysis software, and scientific interpretation for some of ESA's key missions in the field (Cluster, Rosetta, Comet Interceptor).

The BRAIN/IPA project aims at building a semi-empirical model describing the effect of the planetary magnetic field on atmospheric erosion in order to assess how it has affected the past evolution of the atmospheres of Venus, Earth and Mars. The PRODEX/Cluster project is more oriented toward the analysis of Cluster observations (four identical scientific spacecraft launched in 2000 and still operating) with a focus on the energy, mass and current conservation between the various plasma reservoirs in the Earth's magnetosphere.

The candidate will work in close contact with his PhD supervisor. He will also interact on a regular basis with the members of the Space Physics group and the researchers involved in the IPA project.

### Responsibilities

The successful candidate will be in charge of the:

- Statistical analysis of ion measurements by the Cluster/CIS experiment: computation of the moments of the distribution function of outflowing ions and correlation with solar wind parameters and geomagnetic indices.
- Estimate of the mass, energy and current transfer between the ionosphere, the magnetosphere and the solar wind.
- Implementation and development of a semi-empirical model of atmospheric erosion based on physical considerations and information available in the scientific literature.
- Analysis of the derived escape rates, evaluation against independent observations and characterization of the associated uncertainties.

### More about BIRA-IASB

The Royal Belgian Institute for Space Aeronomy (BIRA-IASB) is a Belgian Federal Scientific Institute.

Since its founding in 1964, BIRA-IASB has been conducting research and providing public services in space aeronomy, i.e. the physics and chemistry of Earth's atmosphere and other planets, and outer space.

Our scientists use instruments on the ground, in the air, on board balloons or in space and computer models.

[www.aeronomie.be](http://www.aeronomie.be)

Construction and analysis of scenarios regarding the past evolution of the atmospheres of the terrestrial planets with a specific focus on the role of planetary magnetic fields.

He/she will present the research results through scientific publications, project reports, communications to project workshops and scientific meetings.

## Required competences

- Master degree in Sciences or Engineering.
- Experience in Space Physics and/or Magnetospheric Science is a bonus.

## Technical skills

- Knowledge of programming (e.g., in Python, Matlab, IDL).
- Knowledge about space physics.
- Knowledge about data handling and analysis.
- Knowledge of statistics (error propagation, distributions functions, correlations...).

## Generic skills

- Fluent in written and spoken English.
- Knowledge of French and/or Dutch is a plus.
- Scientific curiosity, initiative, motivation and team spirit.
- Autonomy, creativity and motivation to learn continuously.
- Capacity to interact with partners in a multi-lingual environment and to travel several times a year.

## We offer

- The position is on a contractual basis. Salary is according to the federal regulations for scientific contractual personnel on scale SW1. All relevant work experience (public + private sector) will be considered when determining seniority.
- The starting date of 1 September 2021 is negotiable.
- BIRA-IASB takes care of organizing the contacts with a promoter at the university.
- Dynamic working atmosphere with national and international contacts.
- Possibility of training (to be followed during working hours).
- Attractive annual leave policy (minimum 26 days by year).
- Options to balance professional and personal life (flexible schedule) within the 38 hours week.
- Possibility to work from home.
- Pleasant work environment in a scientific institution located in a green setting in Uccle, Brussels.
- Full refund of commuting expenses when using public transportation, compensation when using the bicycle.
- Access to special advantages arranged for the employees of the federal scientific institutions: museum card, hospitalization insurance, reductions via the Fed+ card, etc.
- Company restaurant with reasonably priced hot meals, sandwiches and salad bar.
- On-site childcare during school holidays in July and August.



## Interested?

Send your CV and motivation letter and if possible two or three references (all in PDF-format) to:  
[hr-ae@aeronomie.be](mailto:hr-ae@aeronomie.be) with [fabien.darrouzet@aeronomie.be](mailto:fabien.darrouzet@aeronomie.be) in copy

**with the following reference: "D11\_CLUSTER\_IPA"**

**Deadline for application : May 1, 2021**