



Warsaw, 25 October 2024

PI of the project *Interaction of the local interstellar medium with the heliosphere viewed by a new NASA space mission IMAP* funded by the National Science Centre, Poland (NCN), the principal investigator, Prof. Maciej Bzowski, announces an open call for

NCN scholarship for PhD student WR.110.14.2024

Requirements:

- Master's degree in Astronomy or Physics
- Proficiency at least one programming language/environment (preferably C/C++, Mathematica, Fortran)
- High analytical skills
- Knowledge of English necessary to understand scientific literature, efficient oral and written communication with collaborators, write scientific papers, and present results at scientific conferences
- Motivation to fully engage in the implementation of the project tasks
- Ability and willingness for team work

We will consider applications from candidates planning to obtain the MSc degree before March 1, 2025.

The selected candidate will be required to become a doctoral student at the GeoPlanet Doctoral School at CBK PAN in a special recruitment call that will be announced after this call is concluded.

Description of tasks:

The solar wind emitted from the Sun carves out a cavity called the heliosphere, protecting the solar system from the direct influence of the interstellar medium called the heliosphere. The heliosphere extends more than 100 au from the Sun. Interstellar matter around the Sun is partly ionized, but the charged and neutral components seem to be in thermodynamic and charge equilibrium. However, in the boundary region between the heliosphere and interstellar matter this equilibrium disappears, and the resulting non-equilibrium charge exchange process creates the so-called secondary populations of neutral interstellar species. These populations penetrate inside the heliosphere and carry information on the processes operating in the outer heliosheath and physical conditions of interstellar matter around the Sun.

The secondary components, similarly as the original – the so-called primary components of neutral species have been observed at Earth's orbit since 2009 by a NASA space probe Interstellar Boundary Explorer (IBEX). In 2025, NASA will launch a heliospheric space observatory Interstellar Mapping and Acceleration Probe (IMAP), with new-generation detectors of neutral atoms, which largely expand data collection capabilities of interstellar neutral atoms. To fully understand these new observations, expanded models of the secondary components of interstellar neutral atoms are needed.



The PhD student will extend existing numerical models of the secondary population of interstellar helium and develop similar models for oxygen and neon. With these models, the student will analyze observations of the secondary components of interstellar gas obtained from the experiment IMAP-Lo. The student's tasks will include in particular:

- Development of research methods and models in cooperation with the principal investigator and members of the science team of the project
- Development of software implementing the developed research models
- Scientific analysis of the results obtained
- Preparation of scientific articles and reports
- Presenting results at international scientific conferences and science team meetings
- Everyday reading of scientific literature

Under the scholarship, the PhD student will carry out research tasks in the project full time, under supervision of the principal investigator in person at the CBK PAN facilities in Warsaw. We expect full commitment to the execution of the research tasks. The scientific results will be the basis of the doctoral thesis.

We offer:

NCN scholarship in the amount of PLN 5000 per month up to 48 months, with yearly evaluation of the progress.

The scholarship will be awarded and paid in accordance with the rules laid down in the *Regulations on awarding NCN scholarships in research projects funded by the National Science Centre*, as set out in the Annex to NCN Council Resolution No 124/2022 of 1 December 2022 (hereafter NCN Regulations, https://www.ncn.gov.pl/sites/default/files/pliki/uchwaly-rady/2022/uchwala124_2022-zal1_ang.pdf).

The candidate meeting the requirements to receive a doctoral scholarship for the participants of the doctoral school can combine it with the NCN scholarship.

The application should include:

- Cover letter describing the candidate's competencies, predispositions, and motivations.
- CV with information on the candidate's scientific achievements and education history.
- Information on English language proficiency, at least B2 level (e.g., an exam grade undertaken as part of their studies or an English language proficiency certificate).
- Transcript of records from the first- and second-cycle studies.
- Scan of the master's diploma or other document confirming the award of the master's degree, or, if the degree has not been awarded the degree yet. A declaration of the anticipated time of the award and a written evaluation from the thesis scientific supervisor
- Optionally, other documents confirming the candidate's achievements or competences.
- Recommendation letter from the supervisor of the master's thesis or other academic mentor included in the application package or sent directly by the advisor or mentor to the principal investigator (bzowski@cbk.waw.pl) before the application submission deadline.



Applications in the Polish or English language should be sent to the email address rekrutacja@cbk.waw.pl with the call reference number (WR.110.14.2024) in the email subject **by 25 November 2024.**

Applications will be evaluated in accordance with the criteria set out in Article 3(12) of the NCN Regulations. Questions on the scholarship and the project can be directed to the principal investigator at bzowski@cbk.waw.pl. The results of the call will be announced by 20 December 2024. The scholarship will be awarded after the admission to the GeoPlanet Doctoral School, indicative start date: 1 March 2025.

NOTE: As part of the recruitment procedure, selected candidates may be invited to participate in a remote interview.

In case of the resignation of the selected candidate, we reserve the right to appoint the next person from the ranking list.

Please include the following clause in your application documents: I authorize Centrum Badań Kosmicznych Polskiej Akademii Nauk located in Warsaw (00-716), Bartycka 18A, to process my personal data included in my application documents for the needs of the recruitment process in accordance with Article 6(1)(a) of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

The controller of collected personal data is the Centrum Badań Kosmicznych Polskiej Akademii Nauk located in Warsaw (00-716), Bartycka 18A. The Data Protection Officer may be contacted by email: iod@cbk.waw.pl. Personal data are processed for the purpose of carrying out the recruitment process, based on voluntary consent and for the purposes of fulfilling archival obligations. The legal basis for data processing shall be Article 6(1)(a) (b) (c) (f) of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). In this respect, the legitimate interest of the controller is to enable the recruitment process to be carried out by the controller. We inform you of the right to withdraw your consent at any time, however, the withdrawal of consent does not affect the lawfulness of the processing that was carried out on its basis before the withdrawal of consent. Personal data will be processed for a maximum period of two years. In the event that personal data constitute evidence in proceedings conducted on the basis of the law or the controller has become aware that they may constitute evidence in proceedings, the storage period is extended until the final conclusion of the proceedings. Personal data will not be transferred to a third country or an international organization. Personal data may be made available to services authorized to conduct preparatory proceedings or other public authorities who have the right to access them on the basis of legal provisions. Providing data is voluntary, but necessary for the purpose of recruitment. The data subject is not obliged to provide it, however, failure to provide it may result in the inability to conclude a contract. We inform you about the right to access your personal data, rectify it, delete it or limit its processing and the right to lodge a complaint with the supervisory authority. The Centrum Badań Kosmicznych Polskiej Akademii Nauk does not use profiling or an automated decision-making system in recruitment processes.