

## FORM FOR EMPLOYERS

INSTITUTION Center for Theoretical Physics, Polish Academy of Sciences.....

CITY Warszawa.....

POSITION Two student fellowships (second degree).....

DISCIPLINE Physics.....

POSTED ....11.05.2023.....

EXPIRES ...04.06.2023.....

WEBSITE <http://www.cft.edu.pl>

KEY WORDS black hole physics, gamma-ray bursts, magnetohydrodynamics:  
MHD, relativistic processes, stars, jets, stars, winds, outflows,, nucleosynthesis

DESCRIPTION (field, expectations, comments):

The Director of the Center for Theoretical Physics PAS invites applications for **one PhD student fellowship** at the CTP PAS, financed from the project OPUS 18 "*Origin of Gamma RayBurst and their multimessenger appearance*" funded by National Science Center (grant agreement No." UMO- UMO-2019/35/B/ST9/04000). PI of the project is Prof. Dr hab. Agnieszka Janiuk

The aim of the project is to study accretion flows at the base of gamma-ray flares, formed after the merger of a pair of neutron stars. Using numerical computer simulations, a model of the accretion disk around the black hole, and the wind flowing out of it, will be made. The role of the magnetic field and neutrino transport in the disk and their influence on the dynamics of the process will be investigated. Calculations of nuclear reaction networks and heavy isotope fusion will allow the theoretical glow curves to be confronted with kilonova observations.

In the accretion flows at the base of gamma-ray flares, the physical conditions physical conditions allow nuclear reactions to take place and heavy isotopes to be synthesised. Light nuclides (helium, lithium, beryllium), as well as heavier isotopes with atomic masses in the range  $A \sim 60-80$ , corresponding to the first maximum of abundance, are formed in the accretion disk. Outflows of matter, accelerated due to the presence of a magnetic field, can harbour the formation of further heavy isotopes, in the range of the second and third maxima in the process of rapid neutron capture ('r-process'), where nuclides up to  $A \sim 200$  are produced. Recent observational findings (e.g. the flare associated with source GW 170817) have shown that the subsequent rapid radioactive decay of isotopes is responsible for emission in the optical range and for the so-called 'kilonova' effect.

**Details of the project will appear under the link:**

<http://warsaw4phd.eu/en/candidates/research-projects/> - tab Center for Theoretical Physics PAS.

**We expect the candidates to have:**

- Master's degree in physics or astronomy,
- very good knowledge of numerical methods and programming,
- interest in fluid dynamics and magnetohydrodynamics,
- independence and creativity in solving problems.

**The application must include:**

1. The scientific CV, including the progress in the university studies, scientific achievements (publications, participation in research projects and conferences), with the clause *"I agree to the processing of my personal data contained in the application documents for the purposes necessary for the implementation of the process recruitment by the doctoral school Warsaw-4-PhD"*.
2. Cover letter.
3. A copy of the master's degree diploma (by 2023-07-14)
4. Copies of documents confirming scientific or professional achievements.
5. Two letters of recommendation from a researcher with at least a PhD degree, concerning the candidate and his/her current scientific activity.

The application should be submitted electronically **via the recruitment system** at [www.warsaw4phd.eu](http://www.warsaw4phd.eu) **between 2023-05-22 and 2023-06-04**. The scholarship will be granted in accordance with the annex to the resolution of the NCN Council 96/2016 of October 2016 (around 4800 PLN per month). If you have any questions, please send an e-mail to: [agnes@cft.edu.pl](mailto:agnes@cft.edu.pl)

**The competition will be settled by 2023-07-13.** Candidates will be informed electronically of the results of the competition. Admission to the Doctoral School and the **beginning of the scholarship are scheduled for 2023-10-01.**

## **Information Clause – Job Recruitment**

### **Information Obligation under the Article 13 of the RODO \*:**

#### **1. Data Administrator**

The administrator who is a deciding entity on how your personal data will be used is the Center for Theoretical Physics PAN represented by the Director with the seat in Warsaw Al. Lotników 32/46. You can contact the Administrator by using one of the contact forms available on the website: : <http://www.cft.edu.pl/>

#### **2. Data Protection Inspector**

The Director of the Center for Theoretical Physics of the Polish Academy of Sciences has appointed the Data Protection Inspector (Inspektor Ochrony Danych - IOD) with whom you can contact in all matters relating to your personal data. You can contact the Inspector by sending an email to: [iod@cft.edu.pl](mailto:iod@cft.edu.pl)

#### **3. The Purposes of Processing and the Legal Basis for Processing**

Your personal data will be processed for the purpose of running the current recruitment. The basis for the processing of personal data are the provisions of the Labor Code Act of June 26, 1974 (uniform text: Dz. U. of 2018, item 917) and based on your consent for data processing.

#### **4. The Period of Storage of Personal Data**

Your personal data will be kept for the duration of the present recruitment.

#### **5. Data Recipients\*\***

The recipients of your personal data will be only entities authorized to obtain personal data on the basis of the law. Access to your data is provided only to employees authorized by the administrator and associates who must have access to the data to perform their duties.

#### **6. Your Processing Rights**

You have the right to access your data and the right to correct it or limit processing, as well as the right to appeal against the processing.

#### **7. The Obligation to Provide Data and the Consequences of not Providing Data**

Providing your personal data specified in the Labor Code is obligatory, and for the remaining extent voluntary.

#### **8. The right to make a complaint to the President of the Office for the Protection of Personal Data**

When you feel that the processing of personal data violates the provisions of the general regulation on the protection of personal data, you have the right to make a complaint to the

President of the Office for the Protection of Personal Data.

**Consent to Data Processing**

**I consent to the processing of my personal data by the Center for Theoretical Physics PAN for the needs of:**

- Present recruitment.

I provide the data voluntarily and I declare that they are truthful. I got acquainted with the contents of the above information, including information about the purpose and methods of processing personal data and the right to access my data and the right to correct them.

.....  
date, candidate's signature

\* Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46 / EC (general regulation on data protection)