

Job Responsibilities and Requirements for Positions in Individual Fields

- a) **Department of Physics**, field: **Black Hole Thermodynamics**, supervisor: doc. Bekir Can Lütfüoglu, Ph.D.

Postdoctoral Researcher in Cosmology, Modified Gravity and Gravitational Physics

University of Hradec Králové, Faculty of Science, Department of Physics

Location: Hradec Králové, Czech Republic

Duration: 3 years

Expected start date: January 2027

Position: Full-time, on-site

Gross monthly salary: 46 000 CZK plus bonuses

Application deadline: October 2, 2026

About the position:

The Department of Physics at the Faculty of Science, University of Hradec Králové, invites applications for a two-year Postdoctoral Researcher position in theoretical cosmology, modified gravity and gravitational physics.

The successful candidate will work under the joint scientific supervision of Professors Jan Kříž, Filip Studnička and Bekir Can Lütfüoglu.

The position offers an opportunity to conduct independent and collaborative research and to contribute actively to the development of theoretical physics, cosmology and gravitation at the Department of Physics.

Research focus:

The research program will focus on fundamental and phenomenological aspects of cosmology and theories of gravity.

Possible research directions include:

- modified theories of gravity;
- black holes and compact objects;
- gravitational waves;
- dark matter models;
- strong-field tests of general relativity;
- black-hole perturbations and quasinormal modes;

- gravitational lensing;
- observational signatures of physics beyond general relativity.

An important strategic objective of the position is to establish a sustainable line of cooperation between UHK and leading European groups and networks in cosmology and gravitational-wave physics.

Depending on mutual scientific interests and appropriate institutional arrangements, prospective links may include the European Gravitational Observatory and the Virgo Collaboration, the Max Planck Institute for Gravitational Physics (Albert Einstein Institute), the Einstein Telescope scientific community, the STRONG Group at the Niels Bohr International Academy in Copenhagen, and the international scientific network developed through the CosmoVerse COST Action CA21136 and related European initiatives.

Responsibilities:

The successful candidate will be expected to:

- conduct independent and collaborative research within the scientific scope of the position;
- publish research results in leading international journals;
- present their work at conferences and seminars;
- contribute actively to the scientific life of the Department of Physics;
- participate, where appropriate, in the supervision of students;
- contribute to the organization of seminars and workshops;
- participate in the preparation of research proposals;
- contribute to the development of international scientific partnerships.

Candidate profile:

We are looking for a researcher with a PhD in physics, astronomy, applied mathematics or a closely related discipline, completed before the starting date.

Essential qualifications:

The candidate should have:

- strong expertise in cosmology, general relativity, modified gravity, gravitational physics or relativistic astrophysics;
- experience with analytical and/or numerical research methods relevant to the proposed program;
- a competitive publication records appropriate to the applicant's career stage;
- the ability to develop independent research and work effectively in international collaborations;
- good written and spoken English.

Knowledge of Czech is not required.

Experience in one or more of the following areas would be an advantage:

- gravitational-wave modelling;
- numerical relativity;
- cosmological data analysis;
- scientific computing.

Expected long-term contribution to UHK:

The position is expected to:

- strengthen and broaden research in theoretical physics, cosmology and gravitation within the Department of Physics;
- establish connections between theoretical modelling, gravitational-wave observations and modern astrophysical and cosmological data;
- increase the international visibility and scientific publication output of UHK;
- create opportunities for joint publications, research visits, workshops and student exchanges with leading international institutions;
- improve the Department's competitiveness for future Czech and European research funding, including collaborative projects, COST activities, Horizon Europe and Marie Skłodowska-Curie proposals;
- support the development of a sustainable research group capable of attracting graduate students, visiting researchers and additional externally funded positions;
- contribute to the longer-term development of advanced courses and student projects in gravitation, cosmology, astrophysics and computational physics.

We offer:

- a three-year full-time postdoctoral position starting on 1 January 2027;
- a stimulating and internationally oriented research environment within the Faculty of Science;
- opportunities to develop an independent research program and international collaborations;
- access to the University's research and computational infrastructure;
- support for participation in conferences, workshops and research visits, subject to available funding;
- salary and employment conditions in accordance with the regulations of the University of Hradec Králové.

Application:

Applicants should submit:

- documents listed in Article VII, paragraph 2, items a) to e) of the Vice-Rector's Directive
- documents listed in Article 3, paragraph 6 of the Dean's Decision.

Applications should be sent by e-mail to: katerina.rybakova@uhk.cz.

Application deadline: October 2, 2026.

Selected candidates will be invited for an interview.

For informal enquiries about the scientific scope of the position, please contact:
bekir.lutfuoglu@uhk.cz.

b) **Department of Chemistry**, field: **Analytical Chemistry**, supervisor: doc. Ing. Miroslav Lísa, Ph.D.

Postdoctoral Researcher in Analytical Chemistry – Metabolomic Analysis

University of Hradec Králové, Faculty of Science, Department of Chemistry

Location: Hradec Králové, Czech Republic

Duration: 3 years

Expected start date: January 2027

Position: Part-time or Full-time, on-site

Gross monthly salary: 46 000 CZK plus bonuses

Application deadline: October 2, 2026

About the position:

The Department of Chemistry at the Faculty of Science, University of Hradec Králové, is seeking a motivated and independent Postdoctoral Researcher in the field of Analytical Chemistry with a focus on metabolomic analysis.

The successful candidate will contribute to research based primarily on advanced chromatographic and mass spectrometric techniques and will participate in the development, validation and application of analytical methods for metabolite analysis.

Research focus:

The research will focus on metabolomic analysis using LC-MS and SFC-MS approaches.

The successful candidate will be involved particularly in:

- LC(SFC)-MS analysis of metabolites;
- sample preparation;
- processing and evaluation of analytical data;
- development and validation of analytical methods;

- collaboration on research projects with internal and external partners.

The position also provides an opportunity to develop an independent research programme within the broader scientific scope of the group.

Responsibilities:

The successful candidate will be expected to:

- actively participate in LC(SFC)-MS analysis of metabolites;
- process and evaluate experimental data;
- develop and validate analytical methods;
- prepare scientific manuscripts;
- collaborate with internal and external researchers;

Candidate profile:

We are looking for a researcher with a PhD in Analytical Chemistry or a related field.

Essential qualifications:

The candidate should have:

- a PhD in Analytical Chemistry or a related discipline;
- publications in impact-factor journals indexed in the Web of Science;
- previous experience from a scientific internship abroad;
- practical experience with LC-MS, analytical method development and sample preparation;
- English language proficiency at least at C1 level.

We offer:

- the opportunity to work on metabolomic applications of advanced chromatographic and mass spectrometric techniques;
- involvement in the development and validation of analytical methods;
- collaboration with researchers within and outside the university;
- the opportunity to develop an independent research programme;
- access to the research environment and infrastructure of the Faculty of Science, University of Hradec Králové.

Application:

Applicants should submit:

- documents listed in Article VII, paragraph 2, items a) to e) of the Vice-Rector's Directive
- documents listed in Article 3, paragraph 6 of the Dean's Decision.

Applications should be sent by e-mail to: katerina.rybakova@uhk.cz.

Application deadline: October 2, 2026.

Selected candidates will be invited for an interview.

For informal enquiries about the scientific scope of the position, please contact:

miroslav.lisa@uhk.cz.

- c) **Department of Chemistry**, field: **Biochemistry**, supervisor: doc. RNDr. Lucie Zemanová, Ph.D.

Postdoctoral Researcher in Biochemistry – Study of PDZ Domains

University of Hradec Králové, Faculty of Science, Department of Chemistry

Duration: 3 years

Expected start date: January 2027

Position: Part-time or Full-time, on-site

Gross monthly salary: 46 000 CZK plus bonuses

Application deadline: October 2, 2026

About the position:

The Department of Chemistry at the Faculty of Science, University of Hradec Králové, is seeking a motivated and independent Postdoctoral Researcher in Biochemistry with a focus on the study of PDZ domains.

The successful candidate will participate in experimental biochemical research involving recombinant proteins and domains, their production and characterization, and the investigation of molecular interactions.

Research focus:

The research will focus on biochemical characterization and interaction studies of PDZ domains and related proteins.

The successful candidate will be involved particularly in:

- expression and purification of recombinant proteins and domains;
- biochemical characterization of proteins;
- *in vitro* interaction studies;
- work with cell lines;
- development and modernization of biochemical techniques.

The position also provides an opportunity to develop an independent research programme within the broader scientific scope of the group.

Responsibilities:

The successful candidate will be expected to:

- actively participate in biochemical *in vitro* experiments;
- produce and characterize recombinant domains and proteins;
- conduct various interaction studies;
- contribute to the development and modernization of standard and novel techniques in biochemical research;
- prepare scientific manuscripts;
- collaborate with internal and external researchers;

Candidate profile:

We are looking for a researcher with a PhD in Biochemistry or a related field.

Essential qualifications:

The candidate should have:

- a PhD in Biochemistry or a related discipline;
- publications in impact-factor journals indexed in the Web of Science;
- previous experience from a scientific internship abroad;
- practical experience with expression and purification of recombinant proteins;
- experience with biochemical characterization of proteins;
- experience with handling cell lines;
- English language proficiency at least at C1 level.

We offer:

- the opportunity to participate in experimental biochemical research focused on recombinant proteins and molecular interactions;
- involvement in the development and modernization of biochemical approaches;
- collaboration with researchers within and outside the University;
- the opportunity to develop an independent research programme;
- access to the research environment and infrastructure of the Faculty of Science, University of Hradec Králové.

Application:

Applicants should submit:

- documents listed in Article VII, paragraph 2, items a) to e) of the Vice-Rector's Directive
- documents listed in Article 3, paragraph 6 of the Dean's Decision.

Applications should be sent by e-mail to: katerina.rybakova@uhk.cz.

Application deadline: October 2, 2026.

Selected candidates will be invited for an interview.

For informal enquiries about the scientific scope of the position, please contact:

lucie.zemanova@uhk.cz.

- d) **Department of Chemistry**, field: **Bioorganic Chemistry**, supervisor: prof. PharmDr. Kamil Musílek, Ph.D.

Postdoctoral Researcher in Bioorganic Chemistry – Modulators of Mitochondrial Enzymes in Neurodegeneration

University of Hradec Králové, Faculty of Science, Department of Chemistry

Location: Hradec Králové, Czech Republic

Duration: 3 years

Expected start date: January 2027

Position: Part-time or Full-time, on-site

Gross monthly salary: 46 000 CZK plus bonuses

Application deadline: October 2, 2026

About the position:

The Department of Chemistry at the Faculty of Science, University of Hradec Králové, is seeking a motivated and independent Postdoctoral Researcher in Bioorganic or Medicinal Chemistry with a focus on modulators of mitochondrial enzymes in neurodegeneration.

The successful candidate will participate in research combining molecular design, organic synthesis, compound characterization and *in vitro* evaluation.

Research focus:

The research will focus on the design, preparation, characterization and experimental evaluation of compounds targeting mitochondrial enzymes relevant to neurodegeneration.

The successful candidate will be involved particularly in:

- molecular design;
- organic synthesis;
- characterization of prepared compounds;
- biochemical and other *in vitro* assays;
- development of synthetic, characterization and evaluation techniques.
- The position also provides an opportunity to develop an independent research programme within the broader scientific scope of the group.

Responsibilities:

The successful candidate will be expected to:

- actively participate in experiments involving molecular design, organic synthesis and/or biochemical assays;
- contribute to the development and modernization of synthetic, characterization and evaluation tools;
- prepare scientific manuscripts;
- collaborate with internal and external researchers;

Candidate profile:

We are looking for a researcher with a PhD in Bioorganic Chemistry, Medicinal Chemistry or a related field.

Essential qualifications:

The candidate should have:

- a PhD in Bioorganic Chemistry, Medicinal Chemistry or a related discipline;
- publications in impact-factor journals indexed in the Web of Science;
- previous experience from a scientific internship abroad;
- practical experience with molecular design, synthetic chemistry, compound characterization and *in vitro* evaluation;
- English language proficiency at least at C1 level.

We offer:

- the opportunity to participate in research combining molecular design, synthetic chemistry and biochemical evaluation;
- involvement in the development and modernization of synthetic, characterization and evaluation approaches;
- collaboration with researchers within and outside the university;
- the opportunity to develop an independent research programme;
- access to the research environment and infrastructure of the Faculty of Science, University of Hradec Králové.

Application:

Applicants should submit:

- documents listed in Article VII, paragraph 2, items a) to e) of the Vice-Rector's Directive
- documents listed in Article 3, paragraph 6 of the Dean's Decision.

Applications should be sent by e-mail to: katerina.rybakova@uhk.cz.

Application deadline: October 2, 2026.

Selected candidates will be invited for an interview.

For informal enquiries about the scientific scope of the position, please contact:

kamil.musilek@uhk.cz.

- e) **Department of Biology**, field: **Experimental Biology**, supervisor: RNDr. Alena Myslivcová Fučíková, Ph.D.

Ancient Biomolecules: Genomics, Proteomics and Pathogen Detection in Historical Samples

Postdoctoral Researcher at University of Hradec Králové, Faculty of Science, Department of Biology, Group of experimental biology

Location: Hradec Králové, Czech Republic

Duration: 3 years

Expected start date: January 2027

Position: Full-time, on-site

Gross monthly salary: 46 000 CZK plus bonuses

Application deadline: October 2, 2026

About the position:

The Group of experimental biology at the Department of Biology, Faculty of Science, University of Hradec Králové, is seeking a motivated and independent Postdoctoral Researcher to join a developing research group focused on the molecular analysis of historical and degraded biological material.

Our research combines molecular biology, genomics, proteomics and bioinformatics to investigate biological information preserved in challenging and highly degraded samples. We are particularly interested in the recovery and interpretation of DNA and proteins from historical tissues and in the development and application of multi-omic approaches that maximize the information obtained from limited and irreplaceable biological material.

The successful candidate will contribute to the development of this research area while having substantial freedom to establish their own research questions and independent projects within the broader scientific scope of the group.

Research focus:

The postdoctoral project will focus primarily on genomic and multi-omic characterization of historical and degraded biological samples.

Possible research directions include:

- genomic and metagenomic analysis of historical and degraded biological material;
- development and application of NGS and bioinformatic workflows for challenging, highly fragmented or low-input samples;
- integration of genomic and proteomic datasets;

- identification and characterization of organisms and potential pathogens in historical material;
- assessment of molecular preservation, degradation and contamination, including evolutionary and comparative genomic analyses where relevant.

The project may also extend towards the detection, genomic characterization and evolutionary analysis of pathogens in historical or otherwise degraded biological material in collaboration with partner laboratories.

The postdoctoral researcher will work closely with PhD and MSc students conducting complementary experimental research on extraction and molecular characterization of DNA and proteins from historical tissues.

Responsibilities:

The successful candidate will be expected to:

- independently plan and conduct research within the scientific scope of the position;
- analyze NGS and other omics datasets using appropriate bioinformatic approaches;
- contribute to the design and optimization of experimental and analytical workflows;
- cooperate with researchers working on molecular biology, proteomics and historical biological material;
- prepare scientific publications and present results at international conferences;
- contribute to supervision and mentoring of undergraduate, MSc and PhD students;
- actively contribute to the development of a collaborative and internationally oriented research environment.

Candidate profile:

We are looking for a researcher with a PhD in molecular biology, genomics, bioinformatics, evolutionary biology, microbiology, biological anthropology or a closely related discipline.

Essential qualifications:

The candidate should have:

- experience with genomics and analysis of NGS data;
- practical bioinformatics skills and the ability to work independently with sequencing datasets;
- experience with molecular biology methods, including DNA extraction and PCR-based approaches;
- ability to work independently and to develop scientific questions beyond predefined experimental tasks;
- experience with scientific writing and publication of research results;
- good communication skills and ability to work collaboratively in an interdisciplinary team;

- good command of English.

Experience in one or more of the following areas would be an advantage:

- ancient or historical DNA;
- degraded, low-input or otherwise challenging biological samples;
- metagenomics;
- pathogen genomics;
- comparative or evolutionary genomics;
- proteomics and LC-MS/MS data analysis;
- multi-omics data integration;
- Linux-based bioinformatics and workflow development;
- programming or scripting in R, Python or related languages.

We do not expect candidates to have expertise in all of these areas. We particularly welcome applicants with strong genomic and bioinformatic expertise who are interested in expanding their research towards historical samples, proteomics and multi-omics.

We offer:

- a three-year full-time postdoctoral position;
- the opportunity to join and help shape a new and growing research area at the Department of Biology;
- substantial scientific independence and the possibility to develop an individual research profile;
- access to molecular biology laboratories and research infrastructure at the Faculty of Science;
- opportunities for interdisciplinary collaboration in genomics, proteomics, microbiology and molecular analysis of historical material;
- opportunities to collaborate with external research partners;
- involvement in supervision of students and development of new research projects;
- a friendly and collaborative working environment with emphasis on good research practice and collegial relationships;
- work at a modern university campus in Hradec Králové, a well-connected university city approximately 100 km east of Prague.

Application:

Applicants should submit:

- documents listed in Article VII, paragraph 2, items a) to e) of the Vice-Rector's Directive
- documents listed in Article 3, paragraph 6 of the Dean's Decision.

Applications should be sent by e-mail to: katerina.rybakova@uhk.cz.

Application deadline: October 2, 2026.

Selected candidates will be invited for an interview.

For informal enquiries about the scientific scope of the position, please contact:
alena.fucikova@uhk.cz.