

### Masaryk University

#### Faculty

Faculty of Science

#### Procedure field

Theoretical Physics and Astrophysics

#### Applicant

RNDr. Michal Zajaček, Dr. rer. nat.

#### Applicant's home unit, institution

Faculty of Science, Masaryk University

#### Habilitation thesis

Mapping galactic nuclei: From the Galactic center to distant quasars and back

#### Board members

##### Chair

prof. Rikard von Unge, Ph.D.

*Faculty of Science, Masaryk University*

prof. Mgr. Jiří Krtička, Ph.D.

*Faculty of Science, Masaryk University*

prof. RNDr. David Vokrouhlický, DrSc.

*Astronomický ústav UK, Praha*

Eugene Churazov

*Max Planck Institute for Astrophysics, Germany*

Zoltan Haiman

*Columbia University/ISTA, USA*

##### Members

### Evaluation of the applicant's scholarly/artistic qualifications

Most of the scientific work of the applicant focuses on the study of central parts of our Galaxy and on the analysis of active galactic nuclei. For this purpose, he uses a combination of observational and theoretical approach. Most of his papers were published within a broad international cooperation. The applicant is typically one of the leading authors of such papers.

The applicant received his PhD title as a result of joint studies at the University of Cologne and at the Max Planck Institute for Radioastronomy (Germany). He spent his postdoctoral stays at leading astronomical institutes in Europe, at the Max Planck Institute for Radioastronomy (Bonn, Germany) and at the Center for Theoretical Physics of the Polish Academy of Sciences. The applicant spent the rest of his postdoctoral stays at the Masaryk University, where he obtained the prestigious Junior Star grant of the Czech Science Foundation.

The applicant published 78 refereed papers in prestigious astrophysical journals, most of which fall within WOS category Q1. Most of his papers were published with leading scientists in the field. His works received 1050 citations.

**Conclusion:** The applicant's scholarly/artistic capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Theoretical Physics and Astrophysics.

### Evaluation of the applicant's pedagogical experience

The applicant has pedagogical experience as a tutor at the University of Cologne and as a lecturer at the Masaryk University. At the University of Cologne, he worked as a tutor of the courses Atomic physics and Astrophysics II. At the Masaryk University, he prepares and lectures a course F6550 Structure and evolution of the Universe together with prof. Werner.

The applicant was a supervisor of two successfully defended Master theses and one Bachelor thesis. Currently, he supervises two PhD students and leads the team of four postdoctoral researchers.

**Conclusion:** The applicant's pedagogical capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Theoretical Physics and Astrophysics.

### Habilitation thesis evaluation

The list of reviewers of the habilitation thesis:

Prof. Iossif Papadakis (Physics Department, University of Crete, Greece)

Prof. Benny Trakhtenbrot (School of Physics & Astronomy, Tel Aviv University, Israel)

Dr. Anna Ciurlo (University of California Los Angeles, USA)

The habilitation thesis contains several published papers of the applicant. All papers deal with the astrophysical consequences of the presence of supermassive black holes either in the centre of our Galaxy or in the centres of distant galaxies. The papers were published in leading astrophysical journals such as *Astronomy & Astrophysics* and *Astrophysical Journal*.

The referees point out that the thesis clearly shows the breadth of interests and skills of the applicant, and his ability to lead numerous studies on diverse topics and using various techniques. The referees agree that the applicant is in a position of being promoted to Associate Professor in the institutions they are familiar with. There were no specific questions in any of the reports that would require a response.

The members of the committee agree with the conclusions of the referees. The results contained in the thesis are original results of the scientific research and provide a strong basis for future studies. They lead to a better understanding of the central regions of our Galaxy as well as activity of distant galaxies. The results show that the applicant is a very promising researcher, who is respected worldwide.

**Conclusion:** The applicant's habilitation thesis **meets** the requirements expected of habilitation theses in the field of Theoretical Physics and Astrophysics.

### Secret vote results

Voting took place: electronically

Number of board members		5
Number of votes cast		5
of which	in favour	5
	against	0

### Board decision

Based on the outcome of the secret vote and following an evaluation of the applicant's scholarly or artistic qualifications, pedagogical experience and habilitation thesis, the board hereby submits a proposal to the Scientific Board of the Faculty of Science of Masaryk University to **appoint the applicant associate professor** of Theoretical Physics and Astrophysics.

In Brno on 16.05.2025

prof. Rikard von Unge, Ph.D.