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Habilitation Board Decision on the Nomination for Appointment to Associate Professor

Masaryk University

Faculty	Faculty of Science
Procedure field	Mathematics - Mathematical Analysis
Applicant	RNDr. Martina Pavlačková, Ph.D.
Applicant's home unit, institution	Moravian College Olomouc
Habilitation thesis	Boundary value problems for second-order differential inclusions on compact and non-compact intervals in the Euclidean and abstract spaces

Board members

Chair	prof. RNDr. Zuzana Došlá, DSc.
	Faculty of Science, Masaryk University
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	PřF UP Olomouc
	Prof. Cristina Marcelli
	Universita Politecnica delle Marche

Evaluation of the applicant's scholarly/artistic qualifications

RNDr. Martina Pavlačková, Ph.D. received her Ph.D. in 2008 in Mathematical Analysis, Palacký University, Olomouc, supervisor prof. Jan Andres. Her professional experience includes assistant professor at the Faculty of Science, Palacký University, Olomouc (2008-2019), and at the Department of Computer Science and Applied Mathematics, Moravian College Olomouc (since 2019).

The research of Dr. Pavlačková has focused on the study of topological methods in the theory of nonlinear differential equations and differential inclusions. The main scientific interest of Dr. Pavlačková is boundary value problems for ordinary second-order differential inclusions. These problems are applicable to the analysis of many interesting phenomena arising from life sciences. Her main results include the construction of continuation principles applicable to infinite dimensional and impulse problems and the study of the topological structure of the solution set. Dr. Pavlačková developed a bound set approach for second order boundary value problems which can be used as an effective tool for the verification of the transversality condition.

Dr. Pavlačková is the author or co-author of 20 original research articles, from which 17 articles are in journals in the WoS database (till January 4, 2021), and 1 scholarly book publication. She signed the first two papers under her maiden name Kožušníková.

The papers of Dr. Pavlačková have 32 WoS citations and 4 Google Scholar citations (without self-citations), her WoS h-index is 6 (computed for both her surnames together).

The papers of Dr. Pavlačková obtained three times the Dean's Prize (Faculty of Science, Palacký University Olomouc) for papers published in the high-ranking journals (2010, 2011 and 2012) and she obtained the Dean's Award for best doctoral students works (2008).

She has a fruitful collaboration with foreign institutions, in particular with Universita degli Studi di Modena e Reggio Emilia (L. Malaguti, V. Taddei). She lectured on her results at several international conferences and workshops.

Dr. Pavlačková was a member of the research teams of one project of Grant Agency of the Czech Republic, one project of the Ministry of Education and Sports, and one project of the Palacký University Olomouc.

The Habilitation Committee states that Dr. Pavlačková is a mature scientific personality with high-quality scientific results, regular publications, and good international response.

Conclusion: The applicant's scholarly/artistic capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Mathematics - Mathematical Analysis.

Evaluation of the applicant's pedagogical experience

The pedagogical qualification of Dr. Pavlačková includes full-semester lectures and exercises on Mathematical Analysis in the programme Mathematics and Mathematics in the programme Applied Mathematics (Faculty of Science, Palacký University Olomouc) during the period 2008-2019, and since 2019 full-semester lectures on Algebra and Mathematical Analysis (Moravian College Olomouc).

Dr. Pavlačková is the coauthor of 1 textbook *Basics of Mathematical Analysis and their Applications in Economics* (Palacký University Olomouc, 248 pages) and the author of 6 teaching texts. She supervised 15 BSc students and 2 MSc students (from this, 14 successfully defended theses).

She is an excellent teacher. She demonstrated her pedagogical skills also during her habilitation lecture.

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Conclusion: The applicant's pedagogical capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Mathematics - Mathematical Analysis.

Habilitation thesis evaluation

The habilitation thesis of Dr. Pavlačková titled *"Boundary value problems for second-order differential inclusions on compact and non-compact intervals in the Euclidean and abstract spaces"* includes 12 original research papers published in period 2009-2020, supplemented by a common extensive introduction (46 pages).

The Habilitation Committee addressed three internationally recognized experts in the field of mathematical analysis as opponents. They are Valeri Obukhovskii, Doctor of Physical and Mathematical Sciences (Voronezh State Pedagogical University), Irene Benedetti (University of Perugia) and Milan Tvrdý (Mathematical Institute of the Czech Academy of Science).

All opponents highly appreciate the scientific level and novelty of Dr. Pavlačkova's work and achieved results. All papers included in the thesis are published in the high-ranking journals, like *J. Differential Equations, J. Math. Anal. Appl., Nonlin. Analysis, Topological Methods of Nonlin. Analysis and Boundary Value Problems*. Prof. Obkukhovskii wrote in his report: "Dr. Pavlačková has made significant contributions to an important and relevant area in the sphere of topological methods in the theory of nonlinear differential equations and inclusions and now she may be considered as one of the leading experts in this part of contemporary mathematics."

Conclusion: The applicant's habilitation thesis **meet** the requirements expected of habilitation theses in the field of Mathematics - Mathematical Analysis.

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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 Faculty of Science of Masaryk University to **appoint the applicant associate professor** of Mathematics - Mathematical Analysis.

In Brno on 11.01.2021

prof. RNDr. Zuzana Došlá, DSc.   ....