Evaluation Board Decision on the Nomination for Appointment to Professor

Masaryk University	
Faculty	Faculty of Informatics
Procedure field	Informatics
Applicant	Stanislav Živný, Doctor of Philosophy
Applicant's home unit, institution	University of Oxford, UK
Board members	
Chair	prof. RNDr. Antonín Kučera, Ph.D. *Faculty of Informatics, Masaryk University*
Members	Prof. Anuj Dawar *University of Cambridge, UK* prof. RNDr. Petr Hliněný, Ph.D. *Faculty of Informatics, Masaryk University* prof. Mgr. Michal Koucký, Ph.D. *Faculty of Mathematics and Physic CUNI* prof. Ing. Tomáš Vojnar, Ph.D. *Faculty of Information Technology BUT*

Evaluation of the applicant's scholarly/artistic qualifications

The main focus of the applicant's research is devoted to studying constraint satisfaction problems (CSPs), i.e., general classes of decision problems where a set of objects must satisfy certain conditions/restrictions to form an eligible solution. Many fundamental algorithmic questions, such as the coloring problem, maximum cut problem, etc., can be seen as instances of CSP. The study of the computational complexity of CSP requires both deep and broad knowledge of various branches of mathematics and computer science, including graph theory, logic, universal algebra, model theory, discrete algorithms, complexity theory, etc. This research area is active and competitive, and the achieved results find applications in various areas, such as artificial intelligence.

The applicant started his active research in CSP already during his PhD studies. His PhD thesis won the Association for Constraint Programming (ACP) 2011 doctoral research award and was subsequently published as a monograph by Springer. In 2013, the applicant was awarded a prestigious Royal Society University Research Fellowship, which helped him to concentrate on the computational aspects of CSP. The invested research effort resulted in a large number of profound results published at world-leading TCS and AI conferences. Since 2017, the applicant started a systematical study of the power of convex relaxations (such as linear programming and semidefinite programming relaxations) in the framework of his ERC Starting Grant.

During his scientific career, the applicant published more than 40 papers in proceedings of highly selective conferences, including 17 papers in CORE Rank A* conferences such as FOCS, STOC, SODA, LICS, IJCAI, or AAAI. Let us note that about 7% of conferences indexed by CORE have the highest A* ranking. In computer science, publications in proceedings of A* conferences have a similar status as publications in the first decile of journals in other fields of science). Revised versions of most of these papers were subsequently published in recognized journals such as JACM, SIAM J. Comput., and the total number of published journal papers is 39. As of November 2022, there were 1382 citations (H-index 19) listed by Google Scholar, and 460 citations (H-index 12) listed by WoS. All of these indicators largely exceed the requirements of the Professor appointment procedure at Masaryk University.

Overall, the quality of the applicant's research is excellent, and the applicant is broadly recognized as a top researcher in his field. This is also documented by the attached recommendation letters. Professor Andrei Bulatov (Simon Fraser University) writes:

… "He is very productive in his research; the quality and quantity of results he published put him among the very top of early to mid-career researchers in the area."

Professor Andrei Krokhin (Durham University) writes:

… "Dr. Stanislav Živný is undoubtedly a world-class specialist in the study of theoretical aspects of the CSP, including those of relevance to AI."

Conclusion: The applicant's scholarly/artistic capabilities **meet** the requirements expected of applicants participating in a professor appointment procedure in the field of Informatics.

Evaluation of the applicant's pedagogical experience

The applicant's pedagogical activity is broad and includes courses at the Bachelor's, Master's, and Doctoral levels taught at the University of Warwick, the University of Leipzig, and the University of Oxford. The variety of topics is rich, ranging from elementary courses on Computational Complexity, Algorithm Design, Models of Computation, etc., to PhD courses devoted to Valued CSPs, the Complexity of CSPs, and the Complexity of Counting Problems. The applicant (co)authored two advanced textbooks on CSP and another textbook for the undergraduate course on Probability and Computing.

The applicant supervised 2 Bachelor's theses, 8 Master's theses, and two graduated PhD students (Peter Fulla, Jacob Focke).

Professor Andrei Bulatov (Durham University) writes in his recommendation letter:

“I have not had a chance to observe Stanislav teaching, and can only judge his abilities in this area by his CV and talks he gave at various conferences and workshops. During his years at the University of Oxford Dr. Zivny has accumulated very significant teaching experience. He has taught nine different courses, four of which he has developed from scratch. If the quality of conference talks is any indication of teaching abilities, I can confirm that Stanislav consistently gives high quality presentations that (are) both rigorous and entertaining.”

The evaluation committee members also attended several talks presented by the candidate, and they appreciated their high quality. The academic community at Masaryk University had several opportunities to visit candidates’ lectures (for example, the candidate delivered a colloquium talk entitled “Power of algorithms for homomorphisms and generalisations” in November 2018).

Conclusion: The applicant's pedagogical capabilities **meet** the requirements expected of applicants participating in a professor appointment procedure in the field of Informatics.

Evaluation of the applicant as a respected and recognized scholarly or artistic figure in a given field

The applicant’s scientific achievements have been recognized by the scientific community in several ways.

In 2013, he was awarded a Royal Society University Research Fellowship for “outstanding scientists in the UK who are in the early stages of their research career and have the potential to become leaders in their field.” In the year 2016, he was awarded a funded position of a Visiting Scientist at the Simons Institute for the Theory of Computing at UC Berkeley. In the year 2017 he received an ERC Starting Grant.

The applicant is also actively serving the scientific community. Professor Andrei Krokhin writes:

"Dr. Zivny’s international standing in AI is clearly seen from his service on PCs of major AI conferences. His standing in the TCS community grew rapidly in the recent years… In addition to his outstanding technical ability, Stanislav Zivny has a very strong research drive. He has established many scientific contacts across the world and across many research areas, and took the leading role in most research projects in which he participated."

Professor Andrei Bulatov writes:

“Dr. Zivny’s service to the academic community should also be mentioned: he was the program committee chair of several CP Doctoral programs, a program committee member of several top rank conferences on artificial intelligence, including AAAI and IJCAI, he is also an editor of SIAM Journal on Discrete Mathematics, journal of Constraints, and the Philosophical Transactions of the Royal Society.”

Furthermore, the applicant is a Full Professor of Computer Science at the University of Oxford. The applicant’s department is consistently ranked among the best in the world.

Conclusion: The applicant **is** a respected and recognized scholarly figure in his/her field. The applicant **has** made a significant contribution to the development of his/her field. The applicant **constitutes** a leading figure in his/her field of scholarship or research.

Evaluation Board Decision on the Nomination for Appointment to Professor

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 role as a respected and recognized scholarly or artistic figure, the board hereby submits a proposal to the Scientific Board of the Faculty of Informatics of Masaryk University to **appoint the applicant professor** of Informatics.

In Brno on 03.11.2022

prof. RNDr. Antonín Kučera, Ph.D. .....