Habilitation Board Decision on the Nomination for Appointment to Associate Professor

Masaryk University	
Faculty	Faculty of Science
Procedure field	Theoretical Physics and Astrophysics
Applicant	Jörgen Linus Wulff
Applicant's home unit, institution	Faculty of Science, Masaryk University
Habilitation thesis	Integrable deformations of strings
Board members	
Chair	prof. Rikard von Unge, Ph.D. *Faculty of Science, Masaryk University*
Members	doc. Klaus Bering Larsen, Ph.D. *Faculty of Science, Masaryk University* prof. Ing. Branislav Jurčo, CSc., DSc. *Faculty of Mathematics and Physics, Charles University* Prof. Carlos Nunez, PhD *Swansea University, UK* Prof. Konstantinos Sfetsos, PhD *National and Kapodistrian University of Athens, Greece*

Evaluation of the applicant's scholarly/artistic qualifications

The scientific work of Linus Wulff is in the field of String Theory, so far our best candidate for a quantized theory of gravity. In this broad field he has worked on a range of topics from supersymmetry and supergravity to strings in curved backgrounds and integrability.

After receiving his PhD degree in 2007 at Stockholm University Linus Wulff has held positions at some prestigious institutions in the world: as a post-doc at Padova University, Italy (2007-2010) and later as a research associate at Texas A&M University, USA (2010-2013) and Imperial College, UK (2013-2017).

His scientific output by far exceeds what is usually required for habilitation in the Czech Republic. To this date he has authored or co-authored 51 papers published in renowned international peer reviewed scientific journals with a total number of 1673 citations and an h-index of 24 (according to the inSPIRE-hep database which is the standard source of bibliometric data in the field). Some influential contributions are *"The Complete AdS4 x CP3 superspace for the type IIA superstring and D-branes"* with Jaume Gomis from the Perimeter Institute (Canada) and Dmitri Sorokin from INFN in Padua (Italy) with a total of 140 citations or *"Kappa-symmetry of superstring sigma model and generalized 10d supergravity equations"* written with A. A. Tseytlin of Imperial College (UK) with 130 citations. More generally, Dr. Wulff has 3 papers with more than 100 citations each and 9 papers with between 50-99 citations. Less than 5% of the papers in high energy physics receive more than 100 citations.

Dr. Wulff is regularly invited to speak at universities and conferences around the world. For instance to the yearly conference series: "Integrability, Dualities and Deformations". At the moment Linus Wulff is the holder of the GAČR grant GA20-04800S "Integrable deformations".

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

Linus Wulff has pedagogical experience from several universities around the world. At Imperial College (UK) he was the responsible lecturer for several courses, both at the bachelors and masters level on topics such as "Spin-Chains and Bethe Ansatz" (Master's), "Fourier analysis and differential equations" (Bachelor's), "Solid State, Atomic and Nuclear Physics", (Bachelor's). At Masaryk university he is teaching the course "Nonlinear waves and solitons" at the Master's level and he has developed a new course "Physics in spacetime" intended for Bachelor's students. For both courses he has written extensive texts given to the students as study material. The student evaluations for the courses given at MU are excellent.

Linus is also a sought after supervisor. He has successfully supervised two Bachelor's students and one Master's student. In 2021 his Ph.D. student, Stanislav Hronek, was awarded the prestigious MUNI Scientist award by the vice-rector for their joint publication "O(D, D) and the string alpha' expansion: an obstruction". He is expected to defend his thesis during 2023.

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 habilitation thesis of Linus Wulff is based on nine published papers written during 2016-2020. The common theme is the string action and deformations preserving integrability as well as their behavior under T-duality. This small subset of the long publication list of Dr Wulff presents a self contained part of his research and is complemented by an introductory text to the material.

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The opponents of the habilitation thesis were:

Dr. Marc Magro, Physics Laboratory, ENS de Lyon, France

Prof. Dr. Gleb Arutyunov, Universität Hamburg, Germany

Dr. Daniel Thompson, Swansea University, UK

All opponents are very positive in their reports. Prof. Arutyunov writes that "the work of Dr. Wulff makes an original and essential contribution" to the field and concludes "I find the thesis very clearly written with the summary and explanation of the most important and original scientific results." The report of Dr Thompson is equally positive. It praises various part of the thesis in saying "this is an impressive and influential result in the subject ... of integrable deformations" or a bit later comments that "this again is an important result highlighting the quantum constraints of integrable deformed models." He concludes that "this thesis, and the canon it presents, represent an important and influential contribution to the field of integrable models." Finall, Dr. Magro states that although "the problems tackled by the author are very hard ... Dr. Wulff has been able to solve them because he has a deep and thorough knowledge of his field ... and masters a variety of techniques at the forefront of this field." His ends his report by stating that the thesis "is written in a pedagogical way and with all the rigor of Theoretical Physics. This makes this Habilitation thesis enjoyable to read" concluding that "Dr. Wulff is a well-established and respected researcher, with a strong publication list and citation records and his contribution to his field of research is a major one." All three oponents support the application of Dr. Wulff without reservation.

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

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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 Science of Masaryk University to **appoint the applicant associate professor** of Theoretical Physics and Astrophysics.

In Brno on 18.10.2022

prof. Rikard von Unge, Ph.D. .....