MUNI

Annex No. 11 to the MU Directive on Habilitation Procedures and Professor Appointment Procedures

PUBLIC LECTURE EVALUATION

Masaryk University	
Faculty	Faculty of Science
Procedure field	Mathematics - Mathematical Analysis
Applicant	doc. Mgr. Petr Hasil, Ph.D.
Lecture date	September 13, 2023
Lecture topic	Oscillation constants for difference and differential equations
Persons present (number)	31 (on-site) + 3 (on-line)
Designated evaluators (board members)	prof. RNDr. Zuzana Došlá, DSc. (on-site) prof. RNDr. Miroslav Engliš, DrSc. (on-site) prof. RNDr. Vladimír Müller, DrSc. (on-line) prof. RNDr. Mihály Pituk, DSc. (on-line) Univ. Prof. Dipl. Ing. Dr. Gerald Teschl (on-line)

The applicant gave a lecture on oscillation constants for differential and difference equations. The lecture was mainly devoted directly to half-linear equations, which are the contact point of linear and nonlinear equations as well as ordinary and partial differential equations. Therefore, the new presented results have a great potential in applications.

The lecture was structured in three key parts. The first two parts were devoted to differential and difference equations, respectively. The applicant always firstly mentioned the basic motivation and moved on to a brief history of the problem. Then, he described the modern methods used to find oscillation constants and he presented the larger number of results which he and his co-authors had achieved in this area. A useful part for the audience was the comparison of the continuous and the discrete case and the explanation of the problems with the (in)transferability of some of the methods, the context in terms of current and previous research, and the applicability and significance of the results.

In the third part, the applicant briefly introduced the relatively young theory of dynamical equations on time scales, which in a certain sense unifies and covers differential and difference equations. He presented again the methods developed to work on various time scales and the results he has obtained in recent years in this field. An important aspect is the fact that this is not a mere generalization of previous results to other time scales but results that are new even on the basic scales, e.g., for difference equations.

The applicant did not avoid going into technicalities, yet at the same time was always able to keep the general picture.

The lecture was concluded with a discussion of the questions posed from the on-site and online audience.

1. The relationship between the oscillation criteria and the oscillation constants.
2. Do the coefficients need to be continuous or is it enough that they are locally integrable?
3. Is anything known about the behaviour in the gap between the necessary and the sufficient conditions for oscillation?

The applicant demonstrated in his talk as well as in the discussion that he is an expert in the field. The talk has been carefully prepared and the questions were answered satisfactorily.

Conclusion

The lecture delivered by Petr Hasil, entitled "Oscillation constants for difference and differential equations" and delivered as part of the professor appointment procedure, **demonstrated** sufficient scholarly qualifications and pedagogical capabilities expected of applicants participating in a professor appointment procedure in the field of Mathematics - Mathematical Analysis.

The lecture took place in a hybrid form at 12:00. The above-mentioned members of the board attended the lecture and provided its evaluation. All designated evaluators are familiar with the text of the evaluation and agree with it.

Date: September 13, 2023

prof. RNDr. Zuzana Došlá, DSc.

prof. RNDr. Miroslav Engliš, DrSc.