Report of the evaluation committee on the scholarly activity of the Mathematics Institute of Silesian University in Opava

Evaluation committee. The evaluation committee consisted of the following three persons (their research fields are given in italics).

Chair: **prof. dr. hab. Roman Ger** (Uniwersytet Śląski, Katowice, Poland)
functional equations and inequalities, convex analysis, iteration theory

Members: **prof. Sergii Kolyada** (National Academy of Sciences of Ukraine, Kiev, Ukraine)
dynamical systems, chaos theory, dynamical topology
prof. Willard Miller, Jr. (University of Minnesota, USA)
superintegrable systems, Lie groups and algebras, special functions, q-series, mathematical physics

The secretary of the evaluation committee was prof. Ľubomír Snoha (Matej Bel University, Banská Bystrica, Slovakia) who, however, was not a member of the committee.

The members of the committee wish to express cordial thanks to Prof. Ľubomír Snoha for his substantial help and excellent job.

Scope of the evaluation. The evaluation applies to:

(1) the institute's conception of research activity in general;
(2) the individual faculty members of the departments which depend for the most part on funding from grants and similar projects awarded on the basis of excellence in research work: the departments of Real analysis and dynamical systems, of Functional analysis and differential equations, and of Geometry and mathematical physics.

Goal of the evaluation. The committee was asked to provide:

(1) an overall assessment of the conception of the institute's research activity, including possible specific recommendations towards conceptual or organizational changes for its further development;
(2) assessment of the individual faculty members of the above-mentioned research part of the institute from the point of view of their contribution towards the excellence of the research activities of the institute – publication productivity and quality, level of international collaboration, or their overall perspective („scientific promise") for further development of the research activity of the institute.

The envisaged outcome in part (2) was a ranking of the evaluated faculty members into several categories (whose number was left to the committee's judgement – at least 3) according to their performance, from the best to the worst. The committee has chosen 5 categories, see below.

Exempt from the evaluation were graduate students, both full-time and part-time (as well as visiting professors and postdocs on project-funded visiting positions, but currently there are no such persons at the Institute); their materials were nonetheless provided for the use of the evaluation committee in connection with the part (1) above.

In the opinion of the evaluation committee, the person who has only a part-time position is not eligible for the evaluation either (especially because of a heavy teaching load). The committee nevertheless includes some comments on this person in the report.

Evaluation method. The members of the committee individually studied, in advance, the documentation provided by the Institute resp. the individual researchers, as well as databases on the web. The meeting of the committee at the Mathematical Institute in Opava was held on October 31 – November 2, 2017. The members of the committee discussed their views and then interviewed the researchers and the management of the institute. After the interviews, the committee discussed the scores and comments. Then the final assesment was made and a preliminary version of the report was written. The text of the report was finalized through e-mail exchange in the next days.

In order to grade systematically the scientific quality of their research, the committee adopted, after a discussion, the following scale for ranking the individuals:

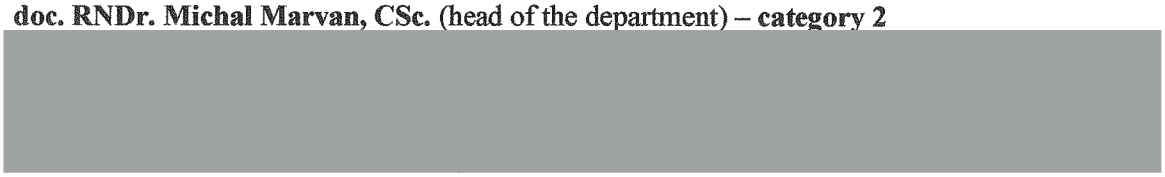
- **1 (Excellent)** Research at a high international level, of international interest with broad impact within its field and with substantial ratio of high quality publications, also in internationally leading journals. The researcher is internationally known as one of the leading experts at least in a subfield of his/her interest. The researcher publishes with good frequency, also at present . It is expected that the high quality and the frequency of outputs will be preserved in next years.
- **2 (Very good)** Research at an international level with impact within its field and with a reasonable ratio of high quality publications in internationally well-known journals. The researcher has an international reputation within the field. The researcher publishes with good frequency, also at present. It is expected that the quality and the frequency of outputs will be preserved in the next years.
- **3 (Good)** Research that is of good standard and impact and at least partially published in well-known journals. An adequate scientific contribution is required (also after the previous evaluation in 2012). There is a hope for improving the situation in near future.
- **4 (Acceptable)** Research with infrequent research outputs of good standard during a longer period of time, the research activity of the individual researcher contributes to the effort of the Institute in the field of science only to a limited extent.
- **5 (Insufficient)** Very low number of research publications during last 10 years. The research activity of the researcher contributes to the effort of the Institute in the field of science only to a negligible extent.

Since the previous evaluation was in 2012, special attention is paid to the period of time 2012-2017.

Assessment of the individual faculty members of the research part of the Institute

Department of Geometry and Mathematical Physics

doc. RNDr. Michal Marvan, CSc. (head of the department) – **category 2**



doc. RNDr. Artur Sergyeyev, PhD. – category 1

RNDr. Jiřina Jahnová (Vodová), PhD. – category 2

RNDr. Hynek Baran, PhD. – category 3

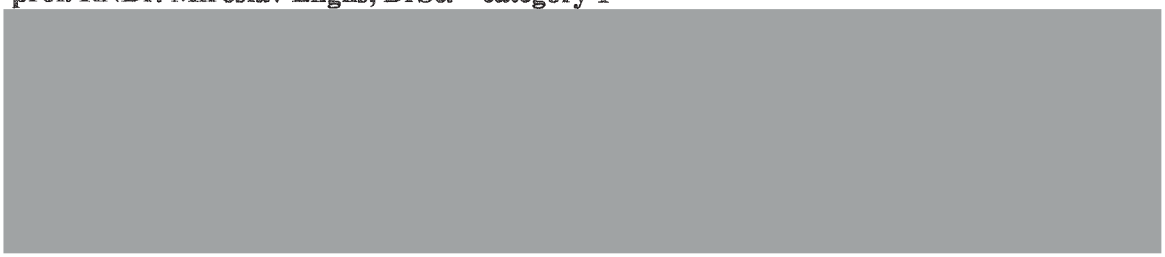
RNDr. Petr Vojčák, PhD. – category 3

Department of Functional Analysis and Differential Equations

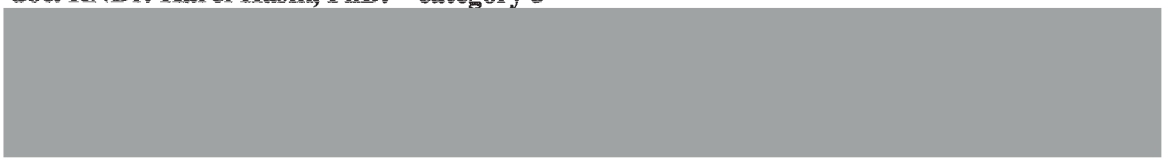
visiting prof. Vladimir Iosifovič Averbuch, DrSc. (head of the department, part time job, 70%)

RNDr. Petr Blaschke, PhD. – category 3

prof. RNDr. Miroslav Engliš, DrSc. – category 1



doc. RNDr. Karel Hasík, PhD. – category 3



Mgr. Jiří Jahn, PhD. – category 3

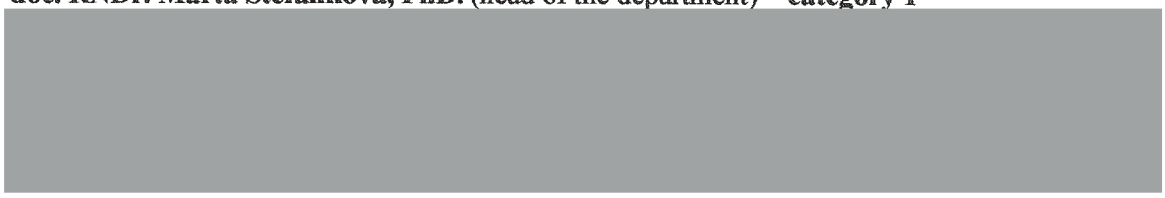
doc. RNDr. Jana Kopfová, PhD. – category 2

RNDr. Petra Nábělková, PhD. – category 3

Ing. Mgr. Barbora Volná, PhD. – category 3

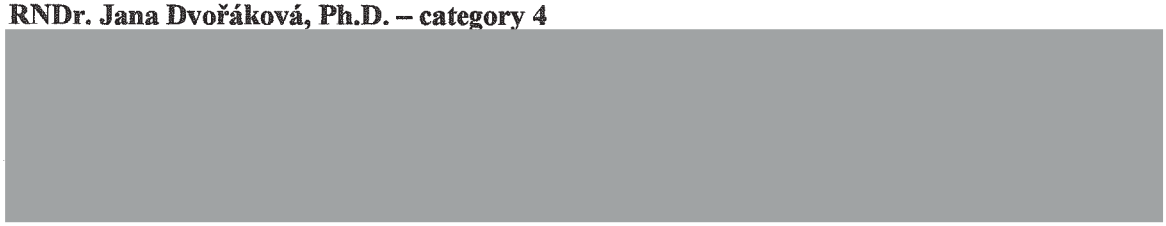
Department of Real Analysis and Dynamical Systems

doc. RNDr. Marta Štefánková, PhD. (head of the department) – **category 1**



prof. RNDr. Jaroslav Smítal, DrSc. – category 1

RNDr. Jana Dvořáková, Ph.D. – category 4



RNDr. Jana Hantáková, PhD. – category 2

doc. RNDr. Zdeněk Kočan, PhD. – category 2

RNDr. Veronika Kurková, PhD. – category 3

doc. RNDr. Michal Málek, PhD. – category 2

RNDr. Michaela Mlíchová, PhD. – category 3

Samuel Joshua Roth, PhD. – category 2

RNDr. Lenka Rucká, PhD. – category 3

Overall assessment of the conception of the Institute's research activity

The research activity of the Mathematics Institute and the overall results obtained since the last evaluation in 2012 are good. Among the researchers there are two outstanding internationally well known mathematicians, Miroslav Engliš and Jaroslav Smítal and two very good younger mathematicians, Artur Sergyeyev and Marta Štefánková.

The average publication activity is good and most of the members of the research part of the Institute are regularly attending conferences and visiting relevant institutions abroad, often as invited guests. Some of the papers written by the members of the Institute appear in leading world journals with high impact factor. There is a good number of citations of the publications of members of the institute.

The research cooperation with mathematicians from outside is high and visible in the publications. The evaluation committee recommends to support especially longer visits (a semester or longer). This would help, in general, to avoid that some researchers continue too long in a too narrow subject.

Currently there are no visiting professors at all. Sergei Trofimchuk and Iosif Krasil'shchik, as visiting professors, effectively started, also via joint publications, scientific collaboration with members of the Institute and they brought new research topics to the Institute. It would be good to find, in the future, sources for organizing graduate schools, in particular for doctoral students and young researchers, by means of inviting outstanding lecturers from outside who would give detailed courses.

The number of research directions is presently too small to meet university standards, considering the size of the faculty, although in each of the three evaluated departments one can find excellent and good mathematicians. If the Institute succeeds in enlarging research directions in the future, possible reorganization of its departments should be discussed.

The current policy of the Institute to hire mainly students from the local population is unwise for the long term health of the Institute. Since 2012, eight of the assistant professors were hired immediately after their PhD graduation and only one came from outside.

In order to maximize research and teaching outputs of highest possible quality, the management of the Institute should maintain the policy of larger differences between researchers from the point of view of their teaching loads and administrative type duties.

The evaluation committee appreciates that the Institute has regularly, twice a year, „outside meetings" where, among others, researchers and PhD students are strongly invited to report on their newest results. We believe that possible critical remarks that they have to face there are stimulating for their work.

The institute hiring policy makes it difficult to bring in researchers with new ideas and capabilities in important fields of mathematics that are not represented here at present; for example, algebraic geometry, probability theory, topology and set theoretical foundations of mathematics. The just enumerated fields would definitely attract more students, not only from local community.

Only two departments have the right to promote people for full professor positions in the area of the research specialization of the department. This makes the Department of Geometry and Mathematical Physics less attractive to highly talented faculty members from elsewhere.

If it would be financially possible, we encourage the Institute authorities to change gradually the present hiring policy, make it possible to send PhD graduates for postdoc training, preferably abroad, and to hire more faculty from elsewhere with a greater range of research qualifications.

There is a serious issue facing the Institute: low enrollment in the PhD program. There are only six PhD students at all and none in the Department of Functional Analysis and Differential Equations. Part of this problem is financial and part due to overall enrollment decline in the Czech Republic. We have no definitive solution to propose, but the issue must be faced.

The committee has some recommendations for evaluations in the future. In the materials the committee is provided with, there should also be included:

- A short presentation of the results of the person, so that the members of the committee who do not work directly in that field, have a global knowledge of his/her research. There should be mentioned which are the best results of his/her, whether there are some important citations etc. Also he/she could present a letter of recommendation for evaluation.
- A short research project for the next 2-3 years.

Opava, November 2nd, 2017

prof. dr hab. Roman Ger

prof. Sergii Kolyada

prof. Willard Miller, Jr.