

Individual evaluation report of the application for provision of the funds of the Facility

Component 9 More efficient governance and strengthening RDI funding

A. Project identification

Call	Štipendiá pre excelentných výskumníkov a výskumníčky R2-R4
Code of the call	09I03-03-V04
Code of the application	09I03-03-V04-00413
Applicant	Mathematical Institute of the Slovak Academy of Sciences

B. Evaluation criteria

Excellence	4.5
<p>The quality and adequacy of the proposed objectives of the project.</p> <p>S1. The proposed objectives of the project are well-defined and clear. W1. It is not sufficiently discussed how the objectives are measurable and achievable within the implementation.</p> <p>Relevance of the problems/needs the project is focused on.</p> <p>S2. The relevance of the identified problems to the proposal's focus is evident.</p> <p>How the project goes beyond the currently available solutions, procedures, etc. ("beyond the state of the art").</p> <p>S3. The proposal shows innovation by going beyond current solutions, indicating a forward-thinking approach.</p> <p>Appropriateness, timeliness and relevance of the proposed methodology to the objectives of the project.</p> <p>S4. The methodology proposed aligns well with the project objectives in terms of appropriateness, timeliness, and relevance. W2. The proposal does not adequately address potential challenges that might arise during project implementation, particularly those related to the chosen methodology.</p> <p>The quality and adequacy of the researcher's professional experience, expertise, competencies and skills.</p> <p>S5. The researcher demonstrates adequate professional experience, expertise, competences, and skills.</p> <p>The quality and adequacy of the host organization in relation to the project and the researcher.</p> <p>S6. The host organization is deemed suitable and capable of supporting the project and the researcher</p>	

effectively.

The quality and adequacy of the conditions that the host organisation will ensure and provide for the researcher (e.g., additional training, supervision/mentoring, possibilities to build its own research team, etc.).

S7. The host organization ensures quality conditions for the researcher, including training and mentoring opportunities.

The quality of two-way knowledge transfer between the researcher and the host organization.

S8. The proposal emphasizes two-way knowledge transfer between the researcher and the host organization.

Impact	2.5
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The credibility of the proposed procedures, the likelihood that the project will achieve the expected results and will have the expected impact.

S1. The measures to maximize medium and long term impact through dissemination, communication activities, attending conferences, and organizing workshops are credible.

W1. Potential negative impact and potential obstacles to the planned impact of the project are not convincingly discussed.

The assumption of a positive impact on the further career of the researcher, the assumption of a positive impact on the applicant/host organization.

S2. The proposal clearly highlights the potential for this project to positively benefit both the researcher's career development and the applicant/host organization's future research endeavors.

The significance of the expected impact – on the given area of knowledge and the scientific community, on the economy, on society, on the environment.

W2. The proposal lacks detailed discussion on the expected impact on various aspects, including science, society and economy.

Adequacy of expected results and impacts of the project – qualitative and quantitative.

W3. The specific expected results related to number of publications and excellent students, doctoral candidates and researchers implementing the project is not well detailed

The appropriateness and quality of the proposed measures to maximize the results and impact of the project.

W4. The plan for maximizing project results and impact lacks sufficient detail.

The quality of the proposed IPR management strategy for project results (if relevant).

W5. The quality of the proposed IPR management strategy is not thoroughly discussed.

Implementation	4.5
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Quality and efficiency of the project plan, feasibility of planned activities.

S1. The proposal plan is well-structured and efficient, demonstrating a clear understanding of the research area and supported by the expertise of the research team and adequate resource allocation.

The coherence and logical framework of the work packages and the adequacy of the allocated resources, the adequacy of the proposed milestones and deliverables.

S2. The proposal work plan is well-structured and efficient, demonstrating a clear understanding of the research area and supported by the expertise of the research team.

W1. The failure to include graduate thesis studies amongst the project deliverables represents a significant oversight.

Estimation of implementation risks, quality of proposed measures.

S3. The work packages are coherently structured and logically aligned with the project's objectives, with appropriate resource allocation and well-defined milestones.

S4. The proposal identifies potential implementation risks and proposes sound measures to address them, emphasizing adaptability and contingency planning.

Capacities (personnel, professional, technical, infrastructure, other) of the applicant/host organisation.

S5. The host organization has capacities across personnel, professional expertise, technical capabilities, and infrastructure, ensuring support for the project's successful execution.

C. Evaluation result

Overall score

11.5

Justification:

The proposal aims to contribute to the domains of mathematical physics and computer science, with potential impacts on quantum computing and societal awareness. The proposal focuses on discrete quantization, which is a relatively new area of research. The researcher's long-term goal is to secure a tenure-track position and establish their independence and organizational skills through the project. Deliverables and milestones are outlined to track progress and ensure the project's success.

Strengths:

The proposal's strengths lie in its potential for significant scientific impact, knowledge exchange with experts, access to well-equipped facilities, networking opportunities, and contributions to the researcher's career advancement and awareness of mathematical physics applications.

Weaknesses:

The proposal primarily focuses on mathematical research with no immediate technical application, potentially limiting its practical impact. The project's long-term economic impact is uncertain, as most applications in mathematical physics are hard to predict and may appear beyond the proposal timeline.

D. Additional questions

Is the researcher's category R2/R3/R4 classified correctly?

yes

If no, please specify:

Does the declared type of research

yes

correspond to the proposed project activities?	
If no, please specify:	

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Component 9 More efficient governance and strengthening RDI funding

A. Project identification

Call	Štipendiá pre excelentných výskumníkov a výskumníčky R2-R4
Code of the call	09I03-03-V04
Code of the application	09I03-03-V04-00413
Applicant	Mathematical Institute of the Slovak Academy of Sciences

B. Evaluation criteria

Excellence	4.5
<p>The quality and adequacy of the proposed objectives of the project.</p> <p>The goals are clearly defined in the field of category theory, specifically in the internalization of structures. Verification of achievement of the objectives will be by publication of results in peer-reviewed journals.</p> <p>Relevance of the problems/needs the project is focused on.</p> <p>Every mathematical problem is interesting in itself. In this case, the objectives can be related to quantum programming languages, thus adding interest to the proposal.</p> <p>How the project goes beyond the currently available solutions, procedures, etc. ("beyond the state of the art").</p> <p>All the objectives go beyond the state of the art in the area and, hence, are appropriate. Taking into account the peculiarities of mathematical research, the activities described in the proposal are precise, including a description of the intuitions and paths to be studied in principle.</p> <p>Appropriateness, timeliness and relevance of the proposed methodology to the objectives of the project.</p> <p>The concept in itself is interesting, relevant, and appropriate described.</p> <p>The methodology is very well described, including the specific lines of research to be followed for each of the scientific objectives, and the previous work on which it is based.</p> <p>The research outputs will be published in journal papers as the standard dissemination measure. Open science principles are adequately covered by publication in arXiv.</p>	

The quality and adequacy of the researcher's professional experience, expertise, competencies and skills.

The researcher has track record consistent with R2 category, and has no experience of being an IP on a research project, but should start sometime.

Previous experience and skills in the topics are very appropriate for the proposal.

The quality and adequacy of the host organization in relation to the project and the researcher.

The host organisation is dedicated to basic research in mathematics and theoretical computer science; furthermore, some of its staff members are well-known researchers in quantum theory. As a result, the applicant is an ideal hosting organisation for this proposal.

The quality and adequacy of the conditions that the host organisation will ensure and provide for the researcher (e.g., additional training, supervision/mentoring, possibilities to build its own research team, etc.).

A purely mathematical research project does not need many requirements and the host organisation will undoubtedly provide them.

The proposed mentor is a recognized researcher in quantum information theory.

The quality of two-way knowledge transfer between the researcher and the host organization.

The two-way knowledge transfer is perfectly detailed. From the host to the researcher is given in terms of interaction on specific topics with the mentor, and with other members of the staff. The other way of interaction is described as exchange of networks of collaborators.

Impact

4

The credibility of the proposed procedures, the likelihood that the project will achieve the expected results and will have the expected impact.

There is insufficient information about the wider impact of the project after completion. The medium and long term impacts are related to interesting potential applications in the theory of quantum computation. On the one hand in the denotational semantics of quantum programming languages and, on the other hand, in the integration of several mathematical disciplines in the foundation of quantum physics.

The assumption of a positive impact on the further career of the researcher, the assumption of a positive impact on the applicant/host organization.

Certainly, the project will have a positive impact on the career of the researcher, who has not been an IP in any previous project. The host organization will also benefit with a project like this, which is within its main research lines.

The significance of the expected impact – on the given area of knowledge and the scientific community, on the economy, on society, on the environment.

Being a purely mathematical proposal, it has not direct economic, environmental or societal impact. The scientific impact described in the proposal is related to the dissemination of results by publication of journal papers. There are some indications of the potential economic impact should the results of this project enable a significant step forward in quantum computing.

Adequacy of expected results and impacts of the project – qualitative and quantitative.

According to the track record of the researcher, the expected number of scientific publications is slightly overestimated.

In terms of collaboration, the proposal appropriately identifies five different visits by researchers on topics related to this project to establish (or continue) collaboration.

The appropriateness and quality of the proposed measures to maximize the results and impact of the project.

The dissemination measures are very adequate since they not only follow the mathematical standards, including presentation in seminars and conferences and publication in high ranked journals (although no target journals are mentioned) and arXiv, but also include dissemination in terms of publications in social networks..

There is a thorough plan of communication strategies for different types of audiences beyond researchers.

The quality of the proposed IPR management strategy for project results (if relevant).

Not applicable.

Implementation

4.5

Quality and efficiency of the project plan, feasibility of planned activities.

The work plan is described in terms of three partially overlapping scientific working packages, each one containing three specific tasks, plus a specific one for two-way transfer of knowledge and another one for dissemination and communication. The timeline is appropriate.

All the required information is contained in a Gantt chart with deliverables and milestones.

The coherence and logical framework of the work packages and the adequacy of the allocated resources, the adequacy of the proposed milestones and deliverables.

The division into work packages, and the timeline is well justified.

All the deliverables are relevant for the objectives, and their expected dates are adequate. The list of deliverables includes one grant application that was not commented on in the full proposal. The milestones are appropriate, feasible and verifiable.

Estimation of implementation risks, quality of proposed measures.

The risk assessment plan is very well prepared, identifying the main scientific and non-scientific risks and proposing appropriate contingency plans.

Capacities (personnel, professional, technical, infrastructure, other) of the applicant/host organisation.

The infrastructure and technical support of the host organisation is appropriate to the project, which is purely mathematical in nature and does not require any special requirements.

All the projects and outputs of the host organisation provided in the proposal are closely related to the scientific topic.

C. Evaluation result

Overall score

13.0

Justification:

An interesting topic with great potential. Implementation designed very carefully.

Strengths:

+ Very good description of the work plan

Weaknesses:

- There is insufficient information about the wider impact of the project after completion.

D. Additional questions

Is the researcher's category R2/R3/R4 classified correctly?

yes

If no, please specify:

Does the declared type of research correspond to the proposed project activities?

yes

If no, please specify:

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A. Project identification

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Code of the application	09I03-03-V04-00413
Applicant	Mathematical Institute of the Slovak Academy of Sciences

B. Evaluation criteria

Excellence

4

The quality and adequacy of the proposed objectives of the project.

The researcher fails to communicate in a non-technical language and to give a broad introduction that can be understood by anybody else than an expert in the very narrow field of the proposal (category theory). Therefore, it is impossible to assess this aspect of the proposal.

Relevance of the problems/needs the project is focused on.

The identified problems are relevant and challenges the proposal aims to tackle are of relatively broad interest.

How the project goes beyond the currently available solutions, procedures, etc. ("beyond the state of the art").

The state of the art is discussed in detail, as well as how the proposal will go beyond it. The language is again too technical and contains too much technical jargon in order to be easily understandable. Also, the text is plagued by some technical issues (unresolved references).

Appropriateness, timeliness and relevance of the proposed methodology to the objectives of the project.

The methodology is given in sufficient details and properly discussed. The planning is appropriate and the proposed research is timely and relevant.

The quality and adequacy of the researcher's professional experience, expertise, competencies and skills.

The researcher has a good track record and relevant expertise and skills. Their previous experience and international collaborations will be beneficial to the proposed research activities if the project is funded.

The quality and adequacy of the host organization in relation to the project and the researcher.

The host organization is one of the best in the national research landscape, and certainly within the proposal's field of work.

The quality and adequacy of the conditions that the host organisation will ensure and provide for the researcher (e.g., additional training, supervision/mentoring, possibilities to build its own research team, etc.).

The host organization is more than capable of providing ideal environment to realize the proposed research.

The quality of two-way knowledge transfer between the researcher and the host organization.

This aspect was discussed in proper detail and was planned fully appropriately.

Impact	3
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The credibility of the proposed procedures, the likelihood that the project will achieve the expected results and will have the expected impact.

The expected impact of the project is moderate in the medium to long term, but communication skills of the researcher may limit it, since it is essential to use a non-technical language when discussing with various target groups.

The assumption of a positive impact on the further career of the researcher, the assumption of a positive impact on the applicant/host organization.

This aspect was properly discussed in the proposal and a potential for career development of the researcher clearly outlined. The benefits for the host organization were also pointed out.

The significance of the expected impact – on the given area of knowledge and the scientific community, on the economy, on society, on the environment.

The target groups are not clearly identified, but some discussion on the impacts is presented and possible societal and long-term effects are briefly outlined.

Adequacy of expected results and impacts of the project – qualitative and quantitative.

The proposal envisages a number of publications, conference contributions and collaborations. The presented planning is consistent with the previous track record of the researcher.

The appropriateness and quality of the proposed measures to maximize the results and impact of the project.

The relevant measures are briefly outlined and discussed in the proposal. The exploitation of the results is envisaged in a very limited discussion.

The quality of the proposed IPR management strategy for project results (if relevant).

This aspect is not relevant to the proposal.

Implementation	4
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Quality and efficiency of the project plan, feasibility of planned activities.

The descriptions of work packages are given in sufficient details and for each of them a number of tasks is identified and outlined. The project timeline is clearly presented and sounds reasonable and feasible.

The coherence and logical framework of the work packages and the adequacy of the allocated resources, the adequacy of the proposed milestones and deliverables.

The overall project structure is sound and logical. The deliverables are well planned and organized, and milestones are clear and verifiable. The resources are properly allocated.

Estimation of implementation risks, quality of proposed measures.

The risk analysis is well thought-out and the mitigation measures are appropriately outlined.

Capacities (personnel, professional, technical, infrastructure, other) of the applicant/host organisation.

The host organization has all necessary capacities to support the proposed research activities. It is an excellent research environment with significant prior achievements.

C. Evaluation result

Overall score

11.0

Justification:

This is a strong proposal that may bring a moderate medium term impact in the field of quantum computing.

Strengths:

The researcher has a necessary technical expertise and the implementation plan is well thought-out.

Weaknesses:

There are serious issues with the communication of main ideas and plans in a clear and non-technical way, which may limit the impact of the project,

D. Additional questions

Is the researcher's category R2/R3/R4 classified correctly?

yes

If no, please specify:

Does the declared type of research correspond to the proposed project activities?

yes

If no, please specify: