

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Ivan Sechin

PhD Program: Mathematics and Mechanics

Title of Thesis: Quantum R-matrix identities and integrable systems

Supervisor: Professor Anton Zabrodin

Co-supervisor: Dr. Andrei Zotov, Steklov Mathematical Institute, RAS

Name of the Reviewer:

Andrei Marshakov

I confirm the absence of any conflict of interest ✓

(Alternatively, Reviewer can formulate a possible conflict)

Date: DD-MM-YYYY

23.09.2022

The purpose of this report is to obtain an independent review from the members of PhD defense Jury before the thesis defense. The members of PhD defense Jury are asked to submit signed copy of the report at least 30 days prior the thesis defense. The Reviewers are asked to bring a copy of the completed report to the thesis defense and to discuss the contents of each report with each other before the thesis defense.

If the reviewers have any queries about the thesis which they wish to raise in advance, please contact the Chair of the Jury.

Reviewer's Report

Reviewers report should contain the following items:

- Brief evaluation of the thesis quality and overall structure of the dissertation.
- The relevance of the topic of dissertation work to its actual content
- The relevance of the methods used in the dissertation
- The scientific significance of the results obtained and their compliance with the international level and current state of the art
- The relevance of the obtained results to applications (if applicable)
- The quality of publications

The summary of issues to be addressed before/during the thesis defense

The PhD thesis QUANTUM R-MATRIX IDENTITIES AND INTEGRABLE SYSTEMS by Ivan Sechin is devoted to the development and extension of the R-matrix methods in the theory of quantum and classical integrable systems. The thesis consists of an Introduction and three chapters, devoted to construction of new families of the integrable tops and relativistic integrable tops by these methods, and to study the dynamical quantum R-matrices.

These are very among very important problems in modern mathematical physics, and they are solved in the thesis by appropriate modern methods. The main results of the thesis are listed at the end, and they are published in top world and one of the leading in this area journals in theoretical and mathematical physics. The results of the thesis are on the leading international level in this field.

I think that the thesis of Ivan Sechin is well-written and can be defended in its present form.

Provisional Recommendation

I recommend that the candidate should defend the thesis by means of a formal thesis defense

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I recommend that the candidate should defend the thesis by means of a formal thesis defense only after appropriate changes would be introduced in candidate's thesis according to the recommendations of the present report

The thesis is not acceptable and I recommend that the candidate be exempt from the formal thesis defense

23.09.2022