

Jury Member Report – Doctor of Philosophy thesis.


Name of Candidate: Andrey Tarkhov

PhD Program: Physics

Title of Thesis: Ergodization dynamics of the Gross-Pitaevskii equation on a lattice

Supervisor: Associate Professor Boris Fine, Skoltech

Name of the Reviewer:

<p>I confirm the absence of any conflict of interest</p> <p>(Alternatively, Reviewer can formulate a possible conflict)</p>	<p>Signature:</p>  <p>Date: 15/10/2020</p>
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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

Mr Tarkhov's thesis describes the ergodization dynamics of the Gross-Pitaevskii equation on a lattice and the results have been obtained from work carried out at Skoltech.

The work described in the thesis is original and at the leading edge of international research in this field. It is notable that Mr Tarkhov has been involved in a wide range of studies. All necessary concepts are introduced and developed at appropriate points in the text, and the bibliography provides references to the original literature. The thesis could become a valuable resource for ongoing research in this field.

In my opinion, the work is worthy of a PhD. The results obtained by Mr Tarkhov represent an extensive body of original studies in a competitive and technologically-important field. The work has been published in several respectable journals.

There are, naturally, some points that could be pursued in an oral exam if only to give an indication of the depth of understanding the candidate has of some of the more complex aspects of the problems studied during the thesis. I would anticipate that these would focus in particular some of more technical aspects of the various analytical and numerical methods, the motivation for undertaking these investigations within the context of the wider field, the possible applications involved, and the contribution of the candidate in the parts of the work presented in the thesis where several researchers have been involved.

Overall, I would like to praise both the candidate and his supervisor on a comprehensive and important study of a field that will become increasingly relevant to the development of future quantum technologies.



Signed:

Provisional Recommendation

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

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