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# Standard Peer Review

EPSRC Reference: EP/G016194/1

Document Status: With Council

none

**Applicant Details**

Applicant	Dr Vadim Zverovich (Dr V Zverovich)	Organisation	University of the West of England
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**Title of Research Project**

Decomposition Methods for the Reconstruction Conjectures

**Review Information**

Response Due Date	04/07/2008	Reviewer Reference:	KSCKC2
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**Research Council Contact Details**

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**Impact****Significance and Potential of the Research**

*Comment on the potential impact of the proposed research, in terms of its (1) ability to address a timely problem using the appropriate approach; (2) contribution to the UK's world research standing; (3) ability to advance research knowledge for the benefit of the research community.*

This research, if successful, would have a high impact, as the Reconstruction Conjectures are deep and important open questions in discrete mathematics. Indeed, if solved for graphs, the solutions might lead on to solutions of reconstruction questions in many other settings (abelian groups, for example).

Overall, the significance of the research is:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Unsatisfactory	Adequate	Good	Very Good	Outstanding

My confidence level in assessing this is:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Low	Medium	High

**Degree of Novelty or Risk**

*Comment on (1) the originality of the proposed research; (2) the degree of adventure and potential to produce a high return in knowledge advances and / or exploitation and; (3) the incremental nature of the research. Where the proposal is more incremental in nature, comment on the degree to which this is essential to the advancement of knowledge for the benefit of the academic community and / or business, and / or in facilitating a multidisciplinary approach.*

The ideas involved are moderately novel. Using decomposition methods has taken off nicely since the work of Seymour et al. on the strong perfect graph conjecture. The particular ideas here, involving viewing a graph as an operator (via a multiplication defined on 'triads'), are new.

Overall, the degree of novelty and risk is:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unsatisfactory	Adequate	Good	Very Good	Outstanding

My confidence level in assessing this is:

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Low	Medium	High

### People and Development

Comment on the extent to which the proposal contributes to the training and development of highly skilled researchers, considering all levels.

The PI will gain in understanding of reconstruction, and the other researcher will gain from looking at the triads and the associated algebraic structure.

The degree of researcher training and development is:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unsatisfactory	Adequate	Good	Very Good	Outstanding

My confidence level in assessing this is:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Low	Medium	High

### Collaboration

Comment on the nature, appropriateness and likely value of any partnerships proposed (e.g. with another department or institution, with business or overseas institution, or the absence of partnership).

The usual academic partnerships (within department, at conferences, etc.) will be useful. It is particularly nice that the Reconstruction Conjectures are known to just about all combinatorialists, so that at any gathering there will be interested people.

Overall, the value of the collaboration is:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unsatisfactory	Adequate	Good	Very Good	Outstanding

My confidence level in assessing this is:

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Low	Medium	High

### Applicant

#### Ability to Deliver the Proposed Research

Comment on the skills and experience of the applicant(s) and team (including any proposed project partners) to ensure delivery of the research described.

The applicant has written many papers, in several different areas. He has shown his ability to take on board new ideas and concepts. However, he had not yet proved a 'big' result like Reconstruction, and there is no evidence that he is able to attack successfully a major open problem in combinatorics like this.

Overall, their ability to ensure delivery of the research is:

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unsatisfactory	Adequate	Good	Very Good	Outstanding

My confidence level in assessing this is:

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Low	Medium	High

### Planning and Management

Comment on the planning and project management, including timescales, methodology, management of risks and dissemination plans.

All standard, and very tried and tested - this is the standard model in mathematics.

Overall, the planning and management appears:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Unsatisfactory	Adequate	Good	Very Good	Outstanding

My confidence level in assessing this is:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Low	Medium	High

## Resources Requested

Are the resources requested appropriate and justified?

Yes, the resources are sensible and entirely justified.

## Potential Contribution to Knowledge Transfer

Where appropriate, comment on the extent to which the proposal contributes to knowledge transfer / exploitation (e.g. in addressing challenges faced by users, in enabling the flow of knowledge between the research base and business, or society, or in proposing plans for the successful transfer and exploitation of the research outputs).

The knowledge transfer upon successful completion of this project would be the usual maths one, namely that other researchers would be interested and would read the paper.

Overall, the potential for knowledge transfer / exploitation is:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unsatisfactory	Adequate	Good	Very Good	Outstanding

My confidence level in assessing this is:

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Low	Medium	High

## Overall Assessment

### Your Conclusions

Please summarise your view of the proposal.

I think that the project would be great if successful, but I see no reason to suspect that it would be. In particular, there is no track record of major breakthroughs or deep innovations, which would surely be needed for a project on these very tough open questions.

The overall quality of the proposal, as written, is:

<input type="checkbox"/> Unsatisfactory	<input checked="" type="checkbox"/> Adequate	<input type="checkbox"/> Good	<input type="checkbox"/> Very Good	<input type="checkbox"/> Outstanding
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### Recommendations

I believe this project:

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Should not proceed as proposed	Could proceed as proposed	Should proceed

My confidence level in assessing this is:

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Low	Medium	High

## Reviewer Expertise

### Your Area of Expertise

Please indicate your areas of expertise that are relevant to your assessment. Take care not to reveal your identity to the applicant.

Combinatorics, Graph Theory