



**External Reviewer Report - Application for a Grant
Rapport de l'évaluateur externe - Demande de subvention**

<p>Family name, given name and initials(s) of applicant / Nom de famille, prénom et initiale(s) du candidat:</p> <p>Bar-Natan, Dror</p>	<p>Application no. / N° de la demande:</p> <p>RGPIN-2018-04350</p>
<p>Type of grant / Type de subvention: RGPIN</p>	<p>Committee / Comité:</p> <p>1508 /</p>

<p>Confidence Level / Niveau de confiance</p>		
<p>I rate my ability to assess this particular application as / Mes compétences pour évaluer cette demande sont:</p>		
<p>High / Elevées: X</p>	<p>Satisfactory / Satisfaisantes:</p>	<p>Low / Faibles:</p>
<p>EVALUATE EACH ITEM BELOW AND EXPLAIN YOUR ASSESSMENT BY REFERRING TO THE INFORMATION PROVIDED IN THE APPLICATION THAT LEADS YOU TO YOUR CONCLUSIONS. / ÉVALUEZ CHACUN DES POINTS CI-DESSOUS ET EXPLIQUEZ VOTRE ÉVALUATION EN CITANT LES RENSEIGNEMENTS PRÉSENTÉS DANS LA DEMANDE QUI VOUS ONT MENÉ À VOS CONCLUSIONS.</p>		
<p>Excellence of the Researcher: Applicants must present evidence of meaningful research contributions to the natural sciences and engineering field in the past six years. Account for any legitimate delays in research. Excellence du chercheur : Le candidat doit prouver qu'il a apporté des contributions appréciables en sciences naturelles ou en génie au cours des six dernières années. Tenez compte des retards légitimes dans la recherche. Describe the applicant's strengths and weaknesses related to / Décrivez les points forts et les points faibles du candidat en ce qui concerne :</p>		
<p>the knowledge, expertise and experience of the researcher in the natural sciences and engineering, and their stature in the field; / les connaissances, l'expertise et l'expérience du chercheur en sciences naturelles ou en génie et sa réputation dans le domaine;</p> <p>Dror is one of the handful of top figures in the world in quantum topology, some might say the best.</p>		
<p>the quality and impact of their research in the natural sciences and engineering. / la qualité et l'incidence de ses recherches en sciences naturelles ou en génie.</p>		



Everyone working in the area of quantum topology knows and uses Dror's results.

Merit of the Proposal: The proposal must clearly present a program of research in the natural sciences and engineering. The program must not be limited to the development of specific applications of existing knowledge; it must promise an original and innovative contribution.

Mérite de la proposition : La proposition doit clairement présenter un programme de recherche en sciences naturelles ou en génie. Le programme ne doit pas être limité à la mise au point d'applications particulières de connaissances existantes; il doit mener à une contribution originale et innovatrice.

Describe the strengths and weaknesses of the proposal related to: / Décrivez les points forts et les points faibles de la demande en ce qui concerne :

the originality, innovation of the proposal, and the extent to which it suggests and explores novel concepts and lines of inquiry; / l'originalité et le caractère novateur de la proposition et la mesure dans laquelle la recherche est susceptible d'aborder des concepts et des pistes de recherche nouveaux;

This is a research program that is well-formed, totally original and explores a whole new area of the quantum topology picture

the anticipated significance of and expected contributions to research, and potential for impact; / l'importance prévue des travaux et les contributions prévues à la recherche, et les possibilités de répercussions;

Dror emphasizes computability, indeed his whole project is to construct and calculate REALISTICALLY COMPUTABLE invariants of knots, whose entirety is equivalent to the quantum invariants. The potential impact of such work is clear-anyone in the area will have at their disposal, immediately, a family of invariants that can be explored and mined systematically by computer.

the clarity and scope of the short and long-term objectives, methodology and feasibility. / la clarté et la portée des objectifs à court et à long terme du programme de recherche, la méthodologie et à la faisabilité.

The project is clearly stated, the objectives clear and a path which leads to completion of the project is clearly drawn.

Contribution to the Training of Highly Qualified Personnel (HQP): Contributions in the past six years to quality training at all levels (undergraduate students to postdoctoral fellows as well as technicians and research associates) are valued. Assessment of contributions to the training of HQP includes both the applicant's track record and the plans for future training.

Contribution à la formation de personnel hautement qualifié (PHQ) : On accorde de l'importance aux contributions à la formation de qualité à tous les niveaux (les étudiants de premier cycle et des cycles



supérieurs, les stagiaires postdoctoraux, les techniciens et les attachés de recherche) au cours des six dernières années. L'évaluation des contributions à la formation de PHQ doit tenir compte des contributions antérieures et de la formation prévue.

Describe the applicant's strengths and weaknesses related to: / Décrivez les points forts et les points faibles du candidat en ce qui concerne :

the quality and impact of contributions to the training of HQP during the last six years; / la qualité et l'incidence des contributions à la formation de PHQ au cours des six dernières années;

Dror has produced a large number of highly successful students and supervised postdocs of the highest quality.

This can be seen by looking at the file.

the appropriateness of the proposal for the training of HQP in the natural sciences and engineering, and a clear description of the training plan. / la pertinence de la proposition au regard de la formation de PHQ en sciences naturelles ou en génie et la description claire du plan de formation.

This proposal has so many moving parts, clever ideas and well-defined sub-projects that it is ideal for training students at all levels. One could see undergraduate students becoming involved in some aspects, and advanced graduate students and postdocs in others.

Additional comments on the application: / Commentaires supplémentaires sur la demande :

I am very impressed by the idea of using deformation of lie algebras to tackle quantum invariants by producing a sequence of polynomial-time computable invariants which tend in some sense to the entire quantum theory. Its success will be something of a dream come true for those working in the area.