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| **Grantee:** Dror Bar-Natan |
| **Institution:** University of Toronto |
| **Title:** Knot Theory, Algebra, and Higher Algebra |
| **Award Number:** 260758 |
| **Grant Period:** July-December, 2013 |

**Please provide a summary (maximum two pages) of scientific accomplishments during the leave period.**

During the grant period I finished and submitted two major papers, “Balloons and Hoops and their Universal Finite Type Invariant, BF Theory, and an Ultimate Alexander Invariant” (56 pages, see <http://www.math.toronto.edu/~drorbn/papers/KBH/>) and “Finite Type Invariants of W-Knotted Objects: From Alexander to Kashiwara and Vergne” (joint with Zsuzsanna Dancso, 100 pages, see <http://drorbn.net/index.php?title=WKO>). Neither one is yet accepted.

During the grant period I have travelled to 8 different locations (Montreal, Geneva for 3 months, ETH Zurich, U. of Zurich, Bern, Strasbourg, Lausanne, Grenoble) and have given 19 mathematical lectures in these places (plus an additional two in Toronto). See <http://www.math.toronto.edu/~drorbn/Talks/CUMC-1307/>, <http://www.math.toronto.edu/~drorbn/Talks/CanadaMathCamp-1308/>, <http://www.math.toronto.edu/~drorbn/Talks/Machines/index-1308.html>, <http://www.math.toronto.edu/~drorbn/Talks/Geneva-130917/>, <http://www.math.toronto.edu/~drorbn/Talks/Zurich-130919/>, <http://www.math.toronto.edu/~drorbn/Talks/Geneva-131008/>, <http://www.math.toronto.edu/~drorbn/Talks/Geneva-131024/>, <http://www.math.toronto.edu/~drorbn/Talks/Zurich-1310/>, <http://www.math.toronto.edu/~drorbn/Talks/Bern-131104/>, <http://www.math.toronto.edu/~drorbn/Talks/Lausanne-131118/>, <http://www.math.toronto.edu/~drorbn/Talks/Grenoble-1311/>.

In my 6 months of leave prior to the grant period I have travelled to an additional 12 locations and gave an additional 16 mathematical lecture, plus one master class consisting of about 30 hours of lecturing over a two weeks period in Aarhus, Denmark, and I have completed 3 further papers with two further collaborators (all accepted for publication by now).

All and all I had a very productive year and I’d like to thank the Simons Foundation for their support!

**CERTIFICATION: I certify that the information submitted herein are true, complete, and accurate to the best of my knowledge, and agree to comply with terms and conditions outlined in the award letter.**

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| **Grantee Signature:** |
| **Date:** February 25, 2014 |

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| **Signing Official Name:** John Bland |
| **Signing Official Signature:** |
| **Date:** |