

## Poly-Time Knot Theory and Quantum Algebra

**Salaries and Benefits.** Since 2011 I have graduated 5 PhD students (Peter Lee, Karene Chu, Zsuzsanna Dancso, Oleg Chterental, and Iva Halacheva). I am presently working with three more (Huan Vo, Travis Ens, and Robin Gaudreau). I plan to support each of those at around \$8,000 per year. In addition I've had a number of master's students, I expect to have about two more per year, and to support each at about \$4,000 per year. Likewise I've taken a number of undergraduate "summer project" students, and I hope to support about two such students per year, at about \$2,000 each.

I hope to be able to support a postdoctoral fellow throughout the grant period, at about \$40,000 per year.

**Equipment or Facility.** Many of my past projects required massive computations, often running for months at a time (e.g., the calculation of all the invariants appearing on the Knot Atlas, <http://katlas.org>), and many of the results are made available by means of a dedicated web server, <http://drorbn.net>, especially <http://drorbn.net/ap>. My current proposal will clearly lead me to continue using computers in a similar way. This will be a lot more effective if I would be

## Discovery Grant Proposal Budget Justification

able to purchase and maintain current hardware. Hence the \$2,500 allocated per year for purchase or rental of computers and peripherals, and the \$500 allocated per year for the maintenance of those. Also, I will have to pay user fees for some of the programs I will be using (Mathematica, for example) and also to some shared facilities to be provided by my university — internet connection, backup services, etc. I am requesting an amount of \$1,500 per year for these purposes.

**Materials and Supplies.** This amount of \$500 per year will be used primarily to purchase office supplies and printer paper and ink.

**Travel.** In the past I have traveled extensively and gave presentations on my work in a large number of domestic and foreign universities and in many international conferences. I presume this will continue throughout the years of my contract. In addition I hope to support some travel by my graduate students and postdoctoral fellows, and to support visits by my scientific collaborators to Toronto. I am requesting an amount of \$8,000 per year for these purposes.

**Books.** Needs no explain.