

Shameless Marketing

December 30, 2016 2:13 PM

Dear All,

This email is to shamelessly market to you the graduate class I will be teaching this semester, "MAT 1350 Algebraic Knot Theory - Polynomial Time Computations".

Over the last couple of years it emerged that there exists a class of very strong knot invariants that can be computed in polynomial-time (better than the reigning champs, which are all exponential time) - meaning that in principle these invariants can be computed even for very very large knots. Furthermore, there is interesting and promising topology behind this class of invariants, and some novel algebra, especially around Lie algebras and their universal enveloping algebras. There are also many directions to explore. [Yet unfortunately, at least for now, some of this material is **difficult**.]

My class will be an introduction to the topic, by means of pushing it further. If we work hard during the semester, we may, just may, be able to push things on from $sl(2)$ to $sl(3)$, thus turning the invariant much stronger (even if a bit less computable). It will be truly wonderful if we succeed. Though even if we fail, we will learn a great deal about knots and tangles and virtual knots and virtual tangles and expansions and Lie algebras and Lie bialgebras and about sophisticated computations using Mathematica.

The prerequisites are mathematical maturity and no fear of computers, total comfort with linear algebra: vector spaces, duals, quotients, tensor products, etc., and some appreciation of Lie algebras.

The class will meet on Tuesdays 11-1 and Fridays 11-12 at Bahen 6180. More details at <http://drorbn.net/AcademicPensieve/Classes/17-1350-AKT/About.pdf>.

Sincerely,

Dror Bar-Natan.