Syllabus for MAT 280, Spring 2018

Course Description

The course is focused on the construction of Khovanov homology, a powerful invariant of knots and links. It was used by Rasmussen to give a combinatorial proof of celebrated Milnor conjecture about the four-genus of torus links. The main objective of the course is to explain all methods and results used in this proof. Please see more details at the course webpage:

`http://www.math.ucdavis.edu/~egorskiy/MAT280-s18`

Textbook

There will be no textbook for the course, it will be mainly based on the following papers:

- M. Khovanov. A categorification of the Jones polynomial. Duke Math. J. 101 (2000), no. 3, 359–426.
- D. Bar-Natan. On Khovanov's categorification of the Jones polynomial. Algebraic and Geometric Topology 2 (2002) 337-370.
- E. S. Lee. An endomorphism of the Khovanov invariant. Adv. Math. 197 (2005), no. 2, 554-586.
- J. Rasmussen. Khovanov homology and the slice genus. Invent. Math. 182 (2010), no. 2, 419-447.
- M. Jacobsson. An invariant of link cobordisms from Khovanov homology. Algebr. Geom. Topol. 4 (2004) 1211-1251.

Office hours

Instructor: Eugene Gorsky, `egorskiy@math.ucdavis.edu`
Office hours: TBA at Math 2113.

Grading Policy

The students are expected to choose (after discussing with the instructor) a research paper about Jones polynomial, Khovanov homology or related topics and give a short presentation in class about it. Alternatively, they can submit a short written report about the paper.

Disability Services

Any student with a documented disability who needs to arrange reasonable accommodations must contact the Student Disability Center (SDC). Faculty are authorized to provide only the accommodations requested by the SDC. If you have any questions, please contact the SDC at (530)752-3184 or sdc@ucdavis.edu.