

## MIT-NORTHEASTERN GRADUATE SEMINAR ON QUANTUM COHOMOLOGY AND REPRESENTATION THEORY, SPRING 2014

The seminar is coorganized by Roman Bezrukavnikov, Pavel Etingof, Michael McBreen (MIT), Ivan Losev and Valerio Toledano Laredo (Northeastern). The seminar will alternate between MIT and Northeastern, times and locations TBA. The talks will be given by graduate students mentored by the five organizers and occasionally by the organizers themselves.

As in Fall 2013, we will study connections between Representation theory and Quantum cohomology, this time in the example of  $\text{Hilb}_n(\mathbb{C}^2)$ , a first interesting “non-Lie-theoretic” example.

### **Preliminary (mighty optimistic) list of topics.**

- (1) The Hilbert scheme  $\text{Hilb}_n(\mathbb{C}^2)$ .
- (2) Geometric Representation theory of the Hilbert schemes.
- (3) Quantum cohomology.
- (4) Quantizations in characteristic 0.
- (5) Quantizations in characteristic  $p$ .
- (6) Rational Cherednik algebras.
- (7) Procesi bundles.
- (8) Macdonald positivity.
- (9) Localization theorems.
- (10) Categorification of the monodromy of the quantum connection.