1163-57-19   **Ciprian Manolescu*** (`cm5@stanford.edu`). *Khovanov homology and surfaces in four-manifolds.*
Over the last forty years, most progress in four-dimensional topology came from gauge theory and related invariants. Khovanov homology is an invariant of knots in R^3 of a different kind: its construction is combinatorial, and connected to ideas from representation theory. There is hope that it can tell us more about smooth 4-manifolds; for example, Freedman, Gompf, Morrison and Walker suggested a strategy to disprove the 4D Poincare conjecture using Rasmussen's invariant from Khovanov homology. It is yet unclear whether their strategy can work, and I will explain some of its challenges. I will also review other topological applications of Khovanov homology, with regard to smoothly embedded surfaces in 4-manifolds. (Received September 02, 2020)