Abstract: "A weak mutation - strong selection model for experimental evolution"

Inspired by the Lenski experiment for the evolution of E. coli (`http://en.wikipedia.org/wiki/E._coli_long-term_evolution_experiment`), we discuss a model with random reproduction that, under a suitable rescaling, leads to a stochastic differential equation. We quantify assumptions which lead to a separation of timescales for the effects of mutation and selection. This makes the model tractable and gives some explanation of the form of the fitness curve observed in the long term experiment. Joint work with N. Kurt, L. Yuan and A. Wakolbinger.