Bernoullis Tafelrunde

Graduate Student Seminar

Wednesday, 5 April 2023, 12:15-13:00
Seminarraum 05.002, Spiegelgasse 5

Pascal Oswald

Johannes Gutenberg University Mainz

Of Mice and Men

Abstract

Within Europe there are two genetically distinct subspecies of the house mouse; the Mus musculus musculus (eastern European house mouse) and the Mus musculus domesticus (western European house mouse). The geographical region of meeting and interbreeding of these two subspecies is known as a hybrid zone. Assuming that the underlying genetics is controlled by a single gene which occurs in two types (alleles) a and A and using that the reproductive fitness of homozygotic (i.e. aa, AA) individuals is grater than that of heterozygotic (i.e. aA) individuals one can show that in an infinitely dense population and viewed over large spatial and temporal scales, the proportion of a-alleles in the population at location x and time t is modelled by solutions of the Allen-Cahn equation. In this talk I will discuss probabilistic interpretations of solutions to certain semi-linear parabolic equations (such as the Allen-Cahn equation) by means of a duality to voting schemes on the genealogy of branching Brownian motion.