

Does assortative mating lead to a polymorphic population? A toy model

Radosław Wieczorek

University of Silesia

Does assortative mating lead to a polymorphic population? We present a toy model justification of the positive answer to this question.

The speciation in a common habitat is usually caused by different selective pressures for different traits. We consider a model of phenotypic evolution for sexually reproducing populations in which new species arise only due to assortative mating without any selective pressure. The model is given by a nonlinear operator acting on the space of probability measures and describes the relation between parental and offspring trait distributions. We study long-time behavior of trait distribution and show that in some cases it converges to a combination of Dirac's delta functions. In some situations the convergence to nonsingular polymorphic profile can be observed.