

# **The Kirkpatrick-Barton model and spatially structured sexual populations**

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The Kirkpatrick-Barton model was introduced in 1997 to describe the dynamics of a population structured by both a space variable and a phenotypic trait. It is a precise model, describing the propagation and the evolution of the population and even subtle effects like gene flow. This model, despite its compact form (two coupled reaction-diffusion equations), is complicated to analyze mathematically. We will describe in this talk how we are trying to connect this model to other possible approaches, through asymptotic arguments. In a second part of the talk, we will discuss applications of the Kirkpatrick-Barton model to problems such as climate change or invasive species. Based on these concrete biological questions, we will discuss how the model itself and the connections to different approaches can be used.