

Oberseminar Stochastik

Am **Dienstag, 21. Januar 2020**, wird

Herr **Florin Boenkost (GU Frankfurt/Main)**

einen Vortrag halten mit dem Titel:

„Haldane's formula in Cannings models with moderate selection”

Abstract:

Haldane's formula states that the probability of fixation for a single beneficial individual with small selective advantage s and offspring variance v is approximately equal to $2s/v$. This asymptotics can be proven for a class of Cannings models with moderate selection i.e. $s_N = N^{-b}$, which allow for a paintbox construction.

In this talk we discuss the construction of these models including a forward and backward description. Concerning the latter, we show that the number of lineages in the time-discrete ancestral selection graph is in sampling duality with the frequency process. For $b > 2/3$, under assumptions which ensure convergence of the neutral model to Kingman's coalescent, we prove Haldane's formula by a coupling of the number of lineages in the discrete ASG to those in the Moran model.

For the regime $1/2 \leq b \leq 2/3$ two approaches seem promising:

- (i) a direct attack on the calculation of the expected number of lineages in the discrete ASG in equilibrium,
- (ii) a coupling of the frequency process with a branching process in iid random environment. In connection with (ii) we prove a result, comparable to Athreya (1992), for the survival probability of a slightly supercritical branching processes in iid random environment, which relies on methods as in Kersting (2017).

These results are joint work (part of which is still in progress) with Adrián González Casanova, Cornelia Pokalyuk and Anton Wakolbinger.

Zeit: Dienstag, 21. Januar 2020, 14 Uhr c.t.

Ort: Raum 05-136, Institut für Mathematik, Staudingerweg 9, 55128 Mainz

Alle Interessierten sind herzlich eingeladen!

gez. Matthias Birkner