



## A stochastic model of evolution

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Session : Systèmes à une infinité de particules en interaction et applications

## **A stochastic model of evolution**

par **Hervé Guiol**

We propose a stochastic model for evolution. Births and deaths of species occur with constant probabilities. Each new species is associated with a fitness sampled from the uniform distribution on  $[0,1]$ . Every time there is a death event then the type that is killed is the one with the smallest fitness. We show that there is a sharp phase transition when the birth probability is larger than the death probability. The set of species with fitness higher than a certain critical value approach an uniform distribution. On the other hand all the species with fitness less than the critical disappear after a finite (random) time.

Joint work with Machado, F.P., Schinazi, R.B.

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