

Scaling limits for evolutionary models of two-dimensional Young diagrams

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We construct dynamics of two-dimensional Young diagrams associated with their grandcanonical ensembles determined from two types of statistics called uniform and restricted uniform statistics, which were introduced by Vershik [1]. We show that, as the averaged size of the diagrams diverges, the corresponding height variable converges to a solution of a certain non-linear partial differential equation under a proper hydrodynamic scaling. Furthermore, the stationary solution of the limit equation is identified with the so-called Vershik curve. In this way, the derivation of the Vershik curve is understandable from the dynamical point of view.

We also study the corresponding dynamic fluctuation problem in a non-equilibrium situation.

This is a joint work with Tadahisa Funaki (University of Tokyo).

References

- [1] A. VERSHIK, *Statistical mechanics of combinatorial partitions and their limit shapes*, *Func. Anal. Appl.*, **30** (1996), 90–105.