

Asymptotic formula for the partition function of a class of coagulation-fragmentation processes

Freiman Gregory, Dept of Mathematics, Tel-Aviv Univ., Israel.
Granovsky Boris L.*, Dept. of Mathematics, Technion, Israel.

ABSTRACT

We construct a probability model seemingly unrelated to the considered stochastic process of coagulation and fragmentation on the set Ω_N of partitions of a given number N . We prove for this model a local limit theorem, and based on it establish the required asymptotic formula for the partition function of a wide class of reversible measures on Ω_N . The formula partially proves the conjecture stated in Durrett, Granovsky, Gueron, J. Theoretical Probability, 12, 1999. The conjecture is related to the generating function of the studied partition function. The method used in the present paper goes back to A. Khintchine who applied it for calculation of statistical mechanics quantities.

Keywords: *Coagulation-fragmentation, Reversible measures, Local limit theorems*

Mathematics Subject Classification: *60J27, 60K35*

Contact Address: mar18aa@techunix.technion.ac.il