Cramé's Large Deviation Expansion for a Supercritical Branching Process in a Random Environment

Ion Grama *Université de Bretagne -Sud, France*
Quansheng LIU *Université de Bretagne -Sud, France*, E-mail: quansheng.liu@univ-ubs.fr
Eric Miqueu *Université de Bretagne -Sud, France*

Key words: Branching processes, random environment, harmonic moments, Stein's method, Berry-Esseen bound, Cramér's change of probability

Mathematical Subject Classification: Primary 60F17, 60J05, 60J10; Secondary 37C30

Abstract: Let (Z_n) be a supercritical branching process in an independent and identically distributed random environment. We show Cramér's large deviation expansion for $(\log Z_n)$. In the proof we establish a Berry-Esseen theorem on the rate of convergence in the central limit theorem for $(\log Z_n)$, improve an earlier result about the harmonic moments of the limit variable of the naturally normalized population size, and use in an adapted way Cramér's change of probability for the associated random walk. (The talk is based on the reference below.)

References

[1] I. Grama, Q.S. Liu, E. Miqueu (2016). Berry-Esseen bound and Cramér's large deviation expansion for a supercriticql branching process in a random environment, *Stoch. Proc. Appl.*, to appear. See also arXiv:1602.02081 [math].