

OCCUPATION TIME FLUCTUATIONS OF POISSON AND EQUILIBRIUM
BRANCHING SYSTEMS IN CRITICAL AND LARGE DIMENSIONS

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Abstract: Limit theorems are presented for the rescaled occupation time fluctuation process of a critical finite variance branching particle system in \mathbb{R}^d with symmetric α -stable motion starting off from either a standard Poisson random field or the equilibrium distribution for critical $d = 2\alpha$ and large $d > 2\alpha$ dimensions. The limit processes are generalised Wiener processes. The obtained convergence is in space-time and finite-dimensional distributions sense. Under the additional assumption on the branching law we obtain functional convergence.

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