LOCAL EXTINCTION FOR SUPERPROCESSES IN RANDOM ENVIRONMENTS

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Abstract: We consider a superprocess in a random environment represented by a random measure which is white in time and colored in space with correlation kernel $g(x, y)$. Suppose that $g(x, y)$ decays at a rate of $|x - y|^{-\alpha}$, $0 \le \alpha \le 2$, as $|x - y| \to \infty$. We show that the process, starting from Lebesgue measure, suffers longterm local extinction. If $0 \le \alpha < 2$, then it even suffers *finite* time local extinction. This property is in contrast with the classical super-Brownian motion which has a non-trivial limit when the spatial dimension is higher than 2. We also show in this paper that in dimensions $d = 1, 2$ superprocess in random environment suffers local extinction for *any* bounded function g. This talk is based on a joint paper with Mytnik.

References

[1] L. Mytnik & J. Xiong (2007). Local extinction for superprocesses in random environments., *Electron. J. Probab.*, **12**, 1349-1378.