

Probability of identity $\psi(x)$ in one dimension

Distance, x

\bar{x}

δ

One long jump
 $\psi \sim (D_\alpha / \rho \mu^2) x^{-1-\alpha}$

Coalescence
vs dispersal
 $\psi \sim x^{-1+\alpha} / (D_\alpha \rho)$

Superdiffusive
spreading
 $\psi(0) \sim 1 / (\rho \bar{x} \mu)$
 $\psi(0) - \psi \sim x^{\alpha-1} / (D_\alpha \rho)$

Diffusive
spreading
 $\psi \sim \frac{e^{-x/\bar{x}}}{\sqrt{\mu D} \rho}$

Initial contact
 $\psi \sim \delta^{-1+\alpha} / (D_\alpha \rho)$

Dispersal tail exponent, α

1

2