

ASYMPTOTIC PROPERTIES OF A RECONSTRUCTION ALGORITHM FOR INDIVIDUAL PARTICLE TRAJECTORIES IN DISCRETELY OBSERVED BRANCHING DIFFUSIONS

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For discrete observation at time step Δ in a branching diffusion with immigration (BDI), we discuss a reconstruction algorithm which asymptotically, on events of probability tending to 1 as $\Delta \downarrow 0$, allows for correct identification of increments in individual particle trajectories.

We give conditions under which the invariant occupation measure of the BDI process admits a continuous density. We then present an algorithm which asymptotically fills regression schemes corresponding to observed squared increments, from which we can estimate an unknown diffusion coefficient from discrete BDI observations.