A NOTE ON TRANSITION DENSITIES AND COUPLING FOR CBI PROCESSES

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Abstract: In this note, we consider a continuous state branching process with immigration (CBI) where the branching mechanism is driven by a spectrally positive Lévy process (Z_t). Under an assumption on the Lévy measure of (Z_t), we prove that the law of the CBI process at any time $t > 0$ has a density on R_+. Moreover, we also discuss the coupling for the processes.