Abstract: "Time Homogeneous Processes with Given Marginal"

In this talk, I consider the following problem: given a probability measure μ over $\mathbb{R}$ with well defined expected value and given (deterministic) time, does there exist a gap diffusion with the prescribed law at the prescribed time?

This is answered in the affirmative and it is shown that, at least for an atomised space, that a diffusion satisfying the property may be approximated by solutions to fixed point problems.

The introduction of drift b and killing k is considered and conditions under which there is a function a such that $a(\frac{1}{2}\frac{d^2}{dx^2} + b\frac{d}{dx} - k)$ is the infinitesimal generator of a process with the given marginal at the given prescribed time $t > 0$.