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Inverse First-Passage Problem with Applications to Credit Risk Modeling

In the paper we consider the inverse first-passage problem for a Brownian motion, which arises in the context of calibration of some models for equity and credit markets. The objective of the problem is to determine a deterministic barrier such that the corresponding exit time of the process has a given distribution. In contrast to the classical exit time problem, the inverse problem is less studied and even for the standard Brownian motion the existing results are not fully satisfactory. In the paper we identify shortcomings of existing techniques and present a method that addresses these issues.