ON THE FIRST-PASSAGE TIME OF AN INTEGRATED GAUSS-MARKOV PROCESS

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Received June 3, 2015

Abstract. It is considered the integrated process $X(t) = x + \int_0^t Y(s)ds$, where $Y(t)$ is a Gauss-Markov process starting from y. The first-passage time (FPT) of X through a constant boundary and the first-exit time of X from an interval (a, b) are investigated, generalizing some results on FPT of integrated Brownian motion. An essential role is played by a useful representation of X, which allows to reduces the FPT of X to that of a time-changed Brownian motion. Some explicit examples are reported; when theoretical calculation is not available, the quantities of interest are estimated by numerical computation.

Key words and phrases. Diffusion, Gauss-Markov process, first-passage-time .