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Duy Nguyen* (duy.nguyen2@marist.edu), Hancock 3017, Marist College, 3399 North Road, Poughkeepsie, NY 12601. *First hitting time of integral diffusions and applications.*

We study the first hitting time of integral functionals of time-homogeneous diffusions, and characterize their Laplace transforms through a stochastic time change. We obtain explicit expressions of the Laplace transforms for the geometric Brownian motion (GBM) and the mean-reverting GBM process. We also introduce a novel probability identity based on an independent exponential randomization and obtain explicit Laplace transforms of the price of arithmetic Asian options and other derivative prices that non-linearly depend on the integral diffusions. Numerical examples are given to demonstrate the accuracy and efficiency of the proposed method. (Received September 06, 2017)