

Stochastic calculus for generalized Brownian motion and applications to finance

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Abstract

In this paper, we define a stochastic integral with respect to generalized Brownian motion and study their properties. We then derive an Itô type formula including integral processes defined by the stochastic integral and give examples of stochastic differential equation with respect to generalized Brownian motion.

Keywords. Generalized Brownian motion, stochastic integral, Itô type integral, quadratic variation, Itô type process.