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Pricing European option in a mixed bi-fractional Brownian motion. (Chinese. English summary) Zbl 1399.91116

Summary: The pricing problems of European call option are investigated in the research background of short-term random rate of mixed bi-fractional Brownian motion. By using Itô formula of mixed bi-fractional Brownian motion, it can be launched that the zero coupon’s expression of short-term interest subjects to Vasicek model. Then further utilizing the hedge principle and the variable substitution method, the partial differential equation of European option is established. Finally the pricing formula of European call option is obtained.

MSC:
91G20 Derivative securities (option pricing, hedging, etc.)
60G22 Fractional processes, including fractional Brownian motion

Keywords:
option pricing; Vasicek model; mixed bi-fractional Brownian motion; Black-Scholes model