Assuming the market model is driving by the fractional Brownian motion (fBm), we study the following optimization problem:
Under the constraint that $F_g(1) \leq x$. Which measurable function $g : [0, 1] \to R[0, 1]$ will minimize the value $\sup_{t \in [0, 1]} F_g(t)$, where $F_g(t) = H(2H - 1) \int_0^t \int_0^t (t - g(u))(t - g(v))|u - v|^{2H-2}dudv$, and $H \in (\frac{1}{2}, 1)$. This problem is related to hedge a long-term supply commitment with short-term futures contracts under a certain constraint on the terminal risk. In this talk, we will show that a unique solution to this problem always exists. (Received September 15, 2014)