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Vilen Abramov, Kazim Khan and Oana Mocioalca* (oana@math.kent.edu), Department of Mathematical Sciences, Mathematics and Computer Science Building, Summit Street, PO Box 5190, Kent-, OH 44242. *Double barrier hitting time distributions for irregular Gaussian processes and applications.*

The use of path-dependent options such as barrier options and digital options by financial institutions increased dramatically in the 80's and that motivated mathematicians to look at the distribution functions for double barrier hitting probabilities for geometric Brownian motion. The advances made in the last few years in the study and development of stochastic calculus for irregular Gaussian processes, including fractional Brownian motion with Hurst parameter $H < 1/2$, encouraged us to revisit these problems, now considering the price process to be an irregular Gaussian process, maybe even more irregular than fBM with $H < 1/2$. Formulas for the distribution of the double barrier hitting times are obtained and some applications to finance are presented. (Received August 29, 2006)