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**Daniel Conus** and **Mackenzie Wildman\*** ([mackenzie.wildman@gmail.com](mailto:mackenzie.wildman@gmail.com)). *A Gaussian Markov alternative to fractional Brownian motion for pricing financial derivatives.*

Replacing Black-Scholes' driving process, Brownian motion, with fractional Brownian motion allows for incorporation of a past dependency of stock prices but faces a few major downfalls, including the occurrence of arbitrage when implemented in the financial market. I will discuss the development, testing, and implementation of a simplified alternative to using fractional Brownian motion for pricing derivatives. By relaxing the assumption of past independence of Brownian motion but retaining the Markovian property, we are developing a competing model that retains the mathematical simplicity of the standard Black-Scholes model but also has the improved accuracy of allowing for past dependence. This is achieved by replacing Black-Scholes' underlying process, Brownian motion, with the Dobrić-Ojeda process. (Received September 14, 2015)