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Valery A. Kholodnyi* (kholodnyi@mtsu.edu), Department of Mathematical Sciences, Middle Tennessee State University, P.O. Box 34, Murfreesboro, TN 37132. *Valuation and Hedging of Power-Sensitive Contingent Claims for Power with Spikes: a Non-Markovian Approach.*

We present a new approach to modeling spikes in power prices proposed earlier by the author. In contrast to the standard approaches, we model power prices with spikes as a non-Markovian stochastic process. This allows for modeling spikes directly as self-reversing jumps. This also allows for the analytical valuation of European contingent claims on power with spikes and for the analytical valuation and dynamic hedging of European contingent claims on forwards on power for power with spikes.

Moreover, the non-Markovian process we propose provides us with a natural mechanism to explain the absence of spikes in the values of European contingent claims on power far enough from their expiration time while power prices exhibit spikes. This mechanism also explains why power forward prices far enough from the maturity time of the forward contracts on power do not exhibit spikes while power prices do.

Finally, we obtain a linear evolution equation for European contingent claims on power with spikes. We also obtain a semilinear evolution equation for universal contingent claims on power with spikes. Those include Bermudan and American options. Universal contingent claims and the semilinear evolution equation for universal contingent claims were introduced earlier by the author. (Received September 14, 2005)