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Rafael Mendoza* (rafaelmendoza2008@u.northwestern.edu), IEMS, Northwestern University, 2145 Sheridan Road, Evanston, IL 60208, and **Vadim Linetsky** and **Peter Carr**. *Time Changed Markov Processes in Unified Credit-Equity Modeling*.

We develop a novel class of hybrid credit-equity models with state-dependent jumps, local-stochastic volatility and default intensity based on time changes of Markov processes with killing. We model the defaultable stock price process as a time changed Markov diffusion process with state-dependent local volatility and killing rate. When the time change is a Lévy subordinator, the stock price process exhibits jumps with state-dependent Lévy measure. When the time change is a time integral of an activity rate process, the stock price process has local-stochastic volatility and default intensity. When the time change process is a Lévy subordinator in turn time changed with a time integral of an activity rate process, the stock price process has state-dependent jumps, local-stochastic volatility and default intensity. We develop two analytical approaches to the pricing of credit and equity derivatives in this class of models. The two approaches are based on the Laplace transform inversion and the spectral expansion approach (if the payoff is square-integrable), respectively. (Received August 28, 2008)