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Estimates for the Value at Risk and ruin probabilities of diffusion processes with jumps

We have estimates for the tail distribution of $X_t^* = \sup_{0 \le s \le t} X_s$, where X_s is a diffusion process with jumps which satisfies $X_s = m + \int_0^s \sigma_u \, dB_u + \int_0^s b_u \, du + \int_0^s \gamma_{u-} \, d\tilde{N}_u$, where B is a Brownian motion; $\tilde{N}$ a compound Poisson process independent of B; b is an adapted integrable process; σ and γ are only assumed to be predictable—hence random, which encompasses all the stochastic volatility models. We discuss some applications to the estimation of a Dynamic Value at Risk and to the Ruin Probability of a risk process with stochastic investment.