



## **Minisymposium 3 - Stochastic Processes with Jumps: Theory and applications**

### **Pricing corporate bonds in an arbitrary jump-diffusion model based on an improved Brownian-bridge algorithm**

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In our paper "Pricing corporate bonds in an arbitrary jump-diffusion model based on an improved Brownian-bridge algorithm", we provide an efficient algorithm for the computation of default probabilities and bond prices in a structural default model with jumps. Our algorithm allows jump-diffusion processes with arbitrary jump-size distribution as a model for the logarithm of the value process of a firm. Moreover, the algorithm is unbiased and is capable to capture stochastic recovery rates, which are endogenously generated by structural default models with jumps. The algorithm requires to evaluate integrals with the density of the first-passage time of a Brownian bridge as integrand. In terms of precision, we significantly improve an approximation of these integrals which was suggested by Metwally and Atiya (2002) in order to accelerate their barrier-option pricing algorithm. It is well known that allowing a sudden default by jumps results in a positive limit of credit spreads at the short end of the term structure. We provide an explicit formula of this limit, which only depends on the Lévy measure of the logarithm of the firm-value process, the recovery rate, and the distance to default.