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Numerical density calculation for distributions of the Bondesson class

We address the numerical density calculation via Laplace inversion for distributions of the Bondesson class. The classical Bromwich inversion integral involves serious computational challenges such as highly oscillating integrands and infinite integration bounds. It is proven that a certain contour transformation is admissible for the considered class of distributions, yielding a rapidly declining integrand and allowing for a substitution to a finite interval. The approach is tested for distributions with known density (Gamma distribution, IG distribution) and compared to other approaches for unknown densities (alpha-stable distribution). Analogous procedures can be applied for the efficient numerical pricing of CDO contracts in specific CIID models. The talk is based on the paper “Numerical density calculation for distributions of the Bondesson class” by G. Bernhart, J.-F. Mai, S. Schenk, and M. Scherer.