The Moments of Subordinated Lévy Processes Penka Mayster¹, Jivka Slavkova²

¹Institute of Mathematics and Informatics, Bulgarian Academy of Sciences Acad. G. Bonchev St, Bl. 8, 1113 Sofia, Bulgaria penka.mayster@abv.bg
²Faculty of Mathematics and Informatics, Sofia University "St. Kliment Ohridski" 5, J. Bourchier Blvd, 1164 Sofia, Bulgaria

jivka.slavkova@mail.bg

Keywords: Bell polynomials, Faa Di Bruno formula, subordinated Lévy processes, compound Poisson processes

The formula of Faa di Bruno represents the n-th derivative of the composition of two functions f(g(t)), involving the Bell polynomials. Various identities relating moments and cumulants of random variables provide applications of Bell polynomials. As the Laplace exponent of the subordinated Lévy processes is exactly the composition of two Laplace exponents, we utilize the Faa di Bruno formula to describe the moments and cumulants of the subordinated L?vy processes.

References

- E. T. Bell, Exponential polynomials, Annals of Mathematics 35 (1934), 258– 277.
- [2] Ch. A. Charalambides, Enumerative Combinatorics, Chapman and Hall, (2002).
- [3] P. Mayster, Subordinated Markov Branching Processes and Lévy processes, Serdica Math.J., 40(2014), 183–108.
- [4] S. M. Roman, The formulas of Faa di Bruno, AMS Monthly, 87 (1980), 805– 809.

- [5] J. Pitman, Combinatorial Stochastic Processes, Lecture Notes in Mathematics, 1875(2006), Springer, New York, NY.
- [6] F. W. Steutel, K. Van Harn, Infinite divisibility of probability distributions on the real line, Marcel Decker, New York, Basel, (2004).