Modern Stochastics: Theory and Applications 6 (1) (2019) 1–2
https://doi.org/10.15559/19-VMSTA131

Editorial

In this issue we continue our exposition of recent trends in Fractional Calculus and Related Stochastic Processes, initiated in the issue 4 of volume 5 (2018). This topic is reflected in four papers specially invited to this issue by the member of our Editorial Board Professor Enzo Orsingher.

The paper by F. Polito presents a generalization of the Yule model, where the growth of species is described by a non-linear fractional birth process. The development of such kind of models is important in the context of random graph evolutions.

K. Ralchenko and G. Shevchenko establish a new result on existence and uniqueness of a mild solution for a class of non-autonomous parabolic stochastic partial differential equations defined on a bounded open subset and driven by a fractional Brownian motion with the Hurst index $H > 1/2$.

The paper by Yu. Mishura and A. Yurchenko-Tytarenko presents a new approach to definition of the fractional Cox–Ingersoll–Ross process driven by a fractional Brownian motion with an arbitrary Hurst parameter $H \in (0, 1)$. Several properties of this process such as existence of moments and continuity of trajectories are considered.

L. Angelani and R. Garra analyze a telegraph equation with time-dependent coefficients, governing the persistent random walk of a particle moving on the line with a time-varying velocity and changing direction at instants distributed according to a non-stationary Poisson distribution. The space-fractional counterpart of this model is also considered.

The second part of this issue comprises three papers received as regular submissions to the journal and covering such interesting models as time-changed Lévy processes and risk models with dependent claims.

The paper by R.V. Ivanov and K. Ano is devoted to the problem of European-style option pricing in time-changed Lévy models in the presence of compound Poisson jumps; the variance-gamma and the normal-inverse Gaussian models are discussed as particular time-changed Lévy models.

O. Navickienė, J. Sprindys and J. Šiaulys study the discrete time risk model with two seasons and dependent claims and create an algorithm for computing the values of the ultimate ruin probability.

G. Liaudanskaitė and V. Čekanavičius investigate the insurance model when the amount of claims depends on the state of the insured person and claims are connected

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in a Markov chain. The signed compound Poisson approximation is applied to the aggregate claims distribution. The results can be applied to estimate the probable loss of an insurer to optimize an insurance premium.

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