MICHIGAN STATE UNIVERSITY
Department of Statistics and Probability

A Workshop on Future Directions in Fractional Calculus Research and Applications

Enrico Scalas
University of Sussex

Pseudo-Differential Relaxation Equations and Semi-Markov Processes

Abstract

Recently, there has been a surge of interest in an old result discussed by Mainardi et al. [1] that relates pseudo-differential relaxation equations and semi-Markov processes. Meerschaert and Toaldo presented a rigorous theory and I recently applied these ideas to semi-Markov graph dynamics [3]. In this talk, I will present several examples and argue that further work is needed to study the solutions of pseudo-differential relaxation equations and their properties.

References

[1] Mainardi, Francesco, Raberto, Marco, Gorenflo, Rudolf and Scalas, Enrico (2000) Fractional calculus and continuous-time finance II: the waiting-time distribution. Physica A Statistical Mechanics and its Applications, 287 (3-4). pp. 468-481.

[2] Meerschaert, Mark M and Toaldo, Bruno (2015) Relaxation patterns and semi-Markov dynamics arXiv:1506.02951 [math.PR].

[3] Raberto, Marco, Rapallo, Fabio and Scalas, Enrico (2011) Semi-Markov graph dynamics. PLoS ONE, 6 (8). e23370. ISSN 1932-6203. Georgiou, Nicos, Kiss, Istvan and Scalas, Enrico (2015) Solvable non-Markovian dynamic network. Physical Review E, 92 (4). 042801. ISSN 1539-3755.