

AVVISO di SEMINARIO

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*TITLE*

*A fractional Hawkes process*

Abstract

A Hawkes point process with kernel proportional to the probability density function of Mittag-Leffler random variables is introduced. This kernel decays as a power law with exponent  $\beta+1$  in  $(1,2]$ . Several analytical results are proved, in particular for the expected intensity of the point process and for the expected number of events of the counting process. These analytical results are used to validate algorithms that numerically invert the Laplace transform of the expected intensity as well as Monte Carlo simulations of the process. Finally, Monte Carlo simulations are used to derive the distribution of the number of events. The algorithms used for this presentation are available at <https://github.com/habyarimanacassien/Fractional-Hawkes>

Relevant papers:

Chen, J, Hawkes, A G and Scalas, E (2021) A fractional Hawkes process. In: Beghin, Luisa, Mainardi, Francesco and Garrappa, Roberto (eds.) Nonlocal and fractional operators. SEMA SIMAI Springer Series, 26 . Springer International Publishing, pp. 121-131.

Habyarimana, Cassien, Aduda, Jane A, Scalas, Enrico, Chen, Jing, Hawkes, Alan G and Polito, Federico (2023) A fractional Hawkes process II: further characterization of the process. Physica A: Statistical Mechanics and its Applications, 615. pp. 1-11.

Il seminario si terrà il giorno 12 LUGLIO 2023 ore 15:00 nella Aula E del Dipartimento Matematica e Applicazioni, Università di Napoli FEDERICO II, Complesso di Monte Sant'Angelo, Via Cintia, Napoli.

Link to Teams:

[https://teams.microsoft.com/l/meetup-join/19%3aMQ4RZDBo\\_0G-K\\_PHxKtkVYAczOGbTqLmWu95Avgs0s1%40thread.tacv2/1688622949094?context=%7b%22Tid%22%3a%222fcfe26a-bb62-46b0-b1e3-28f9da0c45fd%22%2c%22Oid%22%3a%229413faf6-db8e-4858-98b1-442e3ee2a5df%22%7d](https://teams.microsoft.com/l/meetup-join/19%3aMQ4RZDBo_0G-K_PHxKtkVYAczOGbTqLmWu95Avgs0s1%40thread.tacv2/1688622949094?context=%7b%22Tid%22%3a%222fcfe26a-bb62-46b0-b1e3-28f9da0c45fd%22%2c%22Oid%22%3a%229413faf6-db8e-4858-98b1-442e3ee2a5df%22%7d)