FRACTIONAL NEGATIVE BINOMIAL AND PÓLYA PROCESSES

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Abstract: In this paper, we define a fractional negative binomial process (FNBP) by replacing the Poisson process by a fractional Poisson process (FPP) in the gamma subordinated form of the negative binomial process. It is shown that the one-dimensional distributions of the FPP and the FNBP are not infinitely divisible. Also, the space fractional Pólya process (SFPP) is defined by replacing the rate parameter λ by a gamma random variable in the definition of the space fractional Poisson process. The properties of the FNBP and the SFPP and the connections to PDEs governing the density of the FNBP and the SFPP are also investigated.

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