



Multivariate matrix Mittag–Leffler distributions

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Abstract

We extend the construction principle of multivariate phase-type distributions to establish an analytically tractable class of heavy-tailed multivariate random variables whose marginal distributions are of Mittag–Leffler type with arbitrary index of regular variation. The construction can essentially be seen as allowing a scalar parameter to become matrix-valued. The class of distributions is shown to be dense among all multivariate positive random variables and hence provides a versatile candidate for the modelling of heavy-tailed, but tail-independent, risks in various fields of application.

Keywords Multivariate distribution · Heavy tails · Markov process · Mittag–Leffler distribution · Phase-type · Matrix distribution · Extremes · Laplace transforms

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