Mittag-Leffler vector random fields with Mittag-Leffler direct and cross covariance functions

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Abstract In terms of the two-parameter Mittag-Leffler function with specified parameters, this paper introduces the Mittag-Leffler vector random field through its finite-dimensional characteristic functions, which is essentially an elliptically contoured one and reduces to a Gaussian one when the two parameters of the Mittag-Leffler function equal 1. Having second-order moments, a Mittag-Leffler vector random field is characterized by its mean function and its covariance matrix function, just like a Gaussian one. In particular, we construct direct and cross covariances of Mittag-Leffler type for such vector random fields.