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Time varying axially symmetric vector random fields on the sphere. (English) Zbl 1353.60048
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Summary: This paper presents a general form of the covariance matrix structure for a vector random field that is axially symmetric and mean square continuous on the sphere and provides a series representation for a longitudinally reversible one. The series representation is somehow an imitator of the covariance matrix function, and both of them have simpler forms than those proposed in the literature in terms of the associated Legendre functions and are useful for modeling and simulation. Also, a general form of the covariance matrix structure is derived for a spatio-temporal vector random field that is axially symmetric and mean square continuous over the sphere, and a series representation is given for a longitudinally reversible one.

MSC:

[60G60](#) Random fields
[60G15](#) Gaussian processes
[62M40](#) Random fields; image analysis
[62M10](#) Time series, auto-correlation, regression, etc. in statistics (GARCH)
[62M30](#) Inference from spatial processes

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Keywords:

[axially symmetric random fields](#); [covariance matrix function](#); [elliptically contoured random field](#); [Gaussian random field](#); [stationarity](#)

Full Text: [DOI](#) [arXiv](#)

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