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**Representation of Gaussian isotropic spin random fields.** (English) Zbl 1319.60104


Summary: We develop a technique for the construction of random fields on algebraic structures. We deal with two general situations: random fields on homogeneous spaces of a compact group and in the spin line bundles of the 2-sphere. In particular, every complex Gaussian isotropic spin random field can be represented in this way. Our construction extends P. Lévy’s original idea for the spherical Brownian motion [Rend. Circ. Mat. Palermo (2) 8, 297–310 (1960; Zbl 0100.34103)].

**MSC:**

- 60G60 Random fields
- 60G15 Gaussian processes
- 60B15 Probability measures on groups or semigroups, Fourier transforms, factorization
- 33C55 Spherical harmonics
- 57T30 Bar and cobar constructions

**Keywords:**

- Gaussian isotropic spin random fields; homogeneous spaces; compact groups; spherical harmonics; line bundles

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**References:**


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