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**Integrability of multivariate subordinated Lévy processes in Hilbert space.** (English)

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Summary: We investigate multivariate subordination of Lévy processes, which was first introduced by *O.E. Barndorff-Nielsen* et al. [Adv. Appl. Probab. 46, No. 3, 719–745 (2014; Zbl 1304.91213)], in a Hilbert space valued setting, which has been introduced in [*V. Pérez-Abreu* and *A. Rocha-Arteaga*, Infin. Dimens. Anal. Quantum Probab. Relat. Top. 8, No. 1, 32–54 (2005; Zbl 1067.60052)]. The processes are explicitly characterized and conditions for integrability and martingale properties are derived under various assumptions on the Lévy process and the subordinator. As an application of our theory, we construct explicitly some Hilbert space valued versions of Lévy processes which are popular in the univariate and multivariate case. In particular, we define a normal inverse Gaussian Lévy process in a Hilbert space. The resulting process has the property that at each time all of its finite-dimensional projections are multivariate normally inverse Gaussian distributed as introduced in [*T. H. Rydberg*, Commun. Stat., Stochastic Models 13, No. 4, 887–910 (1997; Zbl 0899.60036)].

**MSC:**

60G51 Processes with independent increments; Lévy processes  
60G15 Gaussian processes  
60G52 Stable stochastic processes

Cited in 2 Documents

**Keywords:**

Lévy processes; multivariate subordination; Hilbert space; integrability; infinite variate normal inverse Gaussian process

**Full Text:** DOI

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