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RANDOM FOURIER-STIELTJES SERIES ASSOCIATED WITH STABLE PROCESS

CHANCHALA NAYAK, SWADHEENANANDA PATTANAYAK, AND MAHENDRA NATH MISHRA

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1. Introduction. Let $X(t, w)$, $t \in R$, be a continuous stochastic process with independent increments and f be a continuous function in $[a, b]$. Then the stochastic integral

$$\int_a^b f(t)dX(t, w)$$

is defined in the sense of convergence in probability and is a random variable (cf. Lukacs [4, p. 148]). Hence in particular

$$A_n(w) = \int_0^1 e^{-2\pi nit}dX(t, w)$$

exists for an orthonormal set $e^{2\pi nit}$ and is the Fourier-Stieltjes coefficient of $X(t, w)$. The series

$$\sum_{-\infty}^{\infty} A_n(w)e^{2\pi niy}$$

is a Fourier-Stieltjes expansion of $X(y, w)$. The convergence and continuity of the series

$$\sum_{-\infty}^{\infty} \frac{A_n(w)}{n}e^{2\pi niy}\,, \tag{1}$$

was studied by Samal [7]. He has shown that the series (1) converges in distribution and the sum is weakly continuous in probability (see Definition D_1 in § 2). Mishra, Nayak and Pattanayak [6] have shown that under the condition $\sum_{-\infty}^{\infty} |a_n|^2 < \infty$ the weighted Random Fourier-Stieltjes series (RFS, for short)

$$\sum_{-\infty}^{\infty} a_n A_n(w)e^{2\pi niy} \tag{2}$$

converges in probability and is weakly continuous in probability. They have also shown that under the stronger condition $\sum_{-\infty}^{\infty} |na_n|^2 < \infty$ the same series converges almost surely at every y and the sum function is strongly continuous in probability (see Definition D_3 in § 2).