Denjoy-Luzin systems and unconditional convergence in Banach spaces

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We call an infinite sequence (ξ_k) of random variables given on a probability space $(\Omega, \mathrm{A}, \mathrm{P})$ a Denjoy-Luzin system if for an infinite sequence (x_k) of scalars the almost sure (a.s.) convergence of the series $\sum_{k=1}^{\infty}|x_k \xi_k|$ implies $\sum_{k=1}^{\infty}|x_k| < \infty$. We give a characterization of Denjoy-Luzin systems. Moreover, we show that if (ξ_k) is a Denjoy-Luzin system and (x_k) is an infinite sequence of elements of a Banach space X then a.s. unconditional convergence of the series $\sum_{k=1}^{\infty} x_k \xi_k$ implies unconditional convergence of the series $\sum_{k=1}^{\infty} x_k$ in X .