TOPOLOGY OF THE CONVERGENCE IN PROBABILITY ON A LINEAR SPAN OF A SEQUENCE OF INDEPENDENT RANDOM VARIABLES

K. Pietruska-Pałuba  
W. Smoleński

Abstract: Let $X_1, X_2, \ldots$ be a sequence of independent symmetric Hilbert space valued non-degenerated random variables and let $L_x$ denote the closed linear span of \{ $X_n$ \} in $L_0(\Omega, \mathcal{F}, P; H)$. If $L_x$ is a locally convex subspace of $L_0$, then $L_x$ is Banach iff $L_x$ does not contain an isomorphic copy of $R^\infty$ iff

$$\sup_n P(X_n = 0) < 1.$$ 

If, moreover, $X_n$ are equidistributed and $P(X_n = 0) = 0$, then

$$\left\{ Y \in L_x : P \left( \| Y \| > \frac{1}{201} \right) < \frac{1}{210} \right\}$$

is a bounded neighbourhood of zero.

2000 AMS Mathematics Subject Classification: Primary: -; Secondary: -;
Key words and phrases: -

THE FULL TEXT IS AVAILABLE HERE