CONVERGENCE OF $P_n x$

The aim of this project is to give a complete proof of Theorem 7.1.2 of the Lecture Notes. As usual, X is a separable Banach space endowed with a centred Gaussian measure γ. We recall that, fixed an orthonormal basis $\{\hat{h}_j : j \in \mathbb{N}\}$ of X_γ^* contained in $j(X^*)$, the projections P_n are defined by

$$P_n x = \sum_{j=1}^{n} \hat{h}_j(x) h_j, \quad n \in \mathbb{N}, \ x \in X.$$

We shall prove that

$$\lim_{n \to \infty} P_n x = x, \quad \gamma - a.e. \ x \in X.$$

The proof uses only concepts introduced in the lecture notes, no extra notion is needed.

REFERENCES

[1] V.I. Bogachev, Gaussian Measures, American Mathematical Society, Providence, 1998.
[2] G. Da Prato, J. Zabczyk Stochastic Equations in Infinite Dimensions, Cambridge Univ. Press, 1992.

Coordinator: Alessandra Lunardi