

Abstract

In the presented work we study the existence of periodic solution to infinite dimensional stochastic equation with periodic coefficients driven by Cylindrical Wiener process. Used theory of infinite dimensional stochastic equations in Hilbert spaces and Markov processes is summarized in the first two chapters. In the third and last chapter we present the result itself. Necessary technical background mostly from operator theory is encapsulated in the Appendix. The proof of existence of periodic solution of corresponding equation is a combination of arguments by Khasminskii, which ensure under suitable conditions the existence of periodic Markov process, and the results of Da Prato, Gątarek and Zabczyk for the existence of invariant measure for homogeneous stochastic equation in Hilbert spaces. At the end we derive sufficient condition for the existence of periodic solution in the language of coefficients using the work of Ichikawa and illustrate the results by the example of Stochastic PDE. The work is written in English.