Referee Report on The Thesis
Filtering for Stochastic Evolution Equations
by magistr V´ıt Kubelka

The author declares the Thesis aims to study the linear filtering problem for infinite-dimensional Gaussian processes with finite-dimensional observation. The signal process is governed by a linear stochastic partial differential equation driven by the noise that is not white in time, like a Gaussian Volterra noise or, in particular, fractional Brownian motion. The problematics of the Thesis is actual and of essential interest.

The theory derived in the Thesis under review covers also linear filtering of stochastic delayed evolution equations driven by Gaussian noise. The Thesis solves a general problem of continuous dependence of the filter on parameters that may be present both in signal and observation processes. The signal here is a Hilbert space-valued Gaussian process and the observation is given by stochastic differential. This Gaussian process and coefficients of stochastic differential are depending on some parameters. The main results are given by Theorems 2.1.1, 2.3.1, 2.5.1, and 3.2.1. All the results are new and of essential interest for the theory of filtration. Some of the results of the Thesis are published in two papers while the others are submitted for publication as another two papers.

Although the Thesis under review is of essential interest, I would like to see concluding remarks showing which goals have been achieved and which directions the author sees merit further development.

Finally, I think, the Thesis is an important study. It can be admitted to the defense.

August 30, 2020.
Professor Lev Klebanov.