The preliminary review for the Thesis of Hamza M.Benzerrouk

entitled

Modern Approaches in Nonlinear Filtering Theory Applied to Original Problems of Aerospace Integrated Navigation Systems with non-Gaussian noises

The work of Mr. Hamza M.Benzerrouk is dedicated to analysis and comparison of development of robust modern non linear filtering algorithms. Some new non linear filtering algorithms for the situations of nonlinear system model and/or non-gaussian noise are also proposed. The analysis of the proposed and existing algorithms is performed mainly by means of extensive computer simulations. Some experimental results are also presented.

The thesis results are also presented in five papers appended to the thesis. The author has quite a number of other papers published (24 papers and one patent).

The theme of the thesis is related to integrated navigation systems and mathematical problems of filtering and prediction. It is important for modern research in applied mathematics and engineering. The obtained results are interesting for both theory and applications of navigation systems. They are discussed at the major international conferences and published in the international journals specialized in navigation and guidance.

I can conclude that the Thesis of Mr. Hamza M.Benzerrouk can be accepted for defence in St.Petersburg State University for the degree in applied mathematics.

Head of the Laboratory "Control of Complex Systems"
of the Institute of Problems in Mechanical Engineering (IPME),
Professor of St.Petersburg State University

June 23, 2014

Alexander Fradkov