



UDC 519.71

Optimal Filtration of Matrix Gaussian Random Processes in Planes Lateral Motion Problem

A. Yu. Litvin, V. T. Pristavko

Saint-Petersburg State University, Russia, 199034, St. Petersburg, Universitetskaya nab., 7-9, alybey@mail.ru, pvt1@yandex.ru

In practice, observation problem is more complex because of random influences (noises): wind effects plane course, sensor errors distort object position view. In order to reduce noise filters are used. Proposed to carry out a simultaneous filtering of identical objects motion by defining problem in matrix variables. To achieve physical realizability controlled matrix filter was proposed. Statements that allow to find the optimal solution was proved.

Key words: matrix filtration, n -covariance matrix, square-law functional.

References

1. Lipcer R. S., Sirjaev A. N. *Statistika sluchainykh protsessov (nelineinaya filtratsiya i smezhnye voprosy)* [Statistics of random processes (Nonlinear filtering and related problems)]. Probability Theory and Mathematical Statistics, vol. 15. Moscow, Nauka, 1974, 696 pp. (in Russian).
2. Pristavko V. T. *Matpichnye modeli upravlennia* [Matrix control models]. St. Petersburg, 2001, 255 p. (in Russian).
3. Zubov V. I. *Lektsii po teorii upravleniya* [Lectures in control theory]. Moscow, Nauka, 1975. 495 pp. (in Russian).
4. Bryson A. E., Jr., Ho Yu-Chi. *Applied Optimal Control*. London, Waltham, Blaisdell Publ. Co., 1969. [Rus. ed.: Braison A., Kho Yu-Shi. *Prikladnaia teoriia optimal'nogo upravleniia*. Moscow, Mir, 1972, 544 p.]