On the estimation of the error of filtration

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The scheme of partially observable stationary wide sense random sequence is reduced to the Kalman-Bucy's scheme:

$$\theta_{n+1} = -b_1\theta_n + \varepsilon_1\eta_1(n+1), \ n = 0,1,\dots,$$

$$\xi_{n+1} = (b_2 - b_1)\theta_n - b_2\xi_n + \varepsilon_1\eta_1(n+1) + \varepsilon\varepsilon_2\eta_2(n+1), n = 0,1,\dots$$

and the estimation of the error of filtration by the small noises coefficients is obtained. This estimation has the following form

$$\gamma_{n+1} \le (\varepsilon_1^2 + \varepsilon^2\varepsilon_2^2)(b_2 - b_1)^{-2},$$

where $|b_1| < 1, |b_2| < 1; \varepsilon, \varepsilon_1, \varepsilon_2$ are small coefficients and γ_n is the error of filtration.

References

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