

Information Reliability, Monitoring and Diagnostics of Navigation Systems

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Concepts of information failure and information reliability of navigation systems (NS) are introduced.

Procedures are considered to calculate NS information reliability, which are based on its error approximation by random diffusion and Markov jump processes. Techniques of the theory of runs and the Fokker-Planck-Kolmogorov equations solution are employed in the procedures.

Effective algorithms are proposed and analyzed for monitoring and diagnostics of information failures and NS malfunctions. The algorithms are based on methods for nonlinear multiple-choice filtration and are supposed to use Kalman filter bank. Examples are given for implementing monitoring and diagnostics for inertial and satellite NS.

The book is intended for wide range of specialists engaged in the field of NS designing. The book contains necessary reference information in mathematical statistics for better understanding the cited material.

Bibliograph.: 99, Fig.44, Tab. 2

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