

SEA CURRENTS ESTIMATION METHODS FOR THE DEAD RECKONING

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The paper considers the estimation and correction of coordinates, which are obtained by dead reckoning with an electromagnetic log. The problem is solved according to the data of the inertial gyroscope corrector, which is based on one uncontrolled gyroscope according to the single-channel inertial vertical principle using methods of the optimal and suboptimal Kalman filtering. It is known that the main dead reckoning error is caused by the error of electromagnetic log resulting from its non-sensitivity to sea currents variability. The work focuses on features of correction problem solving when currents are mainly tidal. In this case, it is demonstrated that error estimations of dead reckoning coordinates are available only using procedures allowing to solve the problem in a non-linear statement. Using non-linear filters, the use of a single-gyroscope corrector provides high-precision support for dead reckoning and autonomous solving of the navigational problem with no data of other navigation means.

Keywords: Inertial navigation system, Inertial vertical, dead reckoning, log.

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Recommended citation:

Sokolov A.U. , Motorin.A.V. SEA CURRENTS ESTIMATION METHODS FOR THE DEAD RECKONING. *Underwater Investigation and Robotics.* 2021. No. 1(35). P. 41–50. DOI: 10.37102/1992-4429_2021_35_01_04

