**"Gyroskopiya i Navigatsiya" №4, 2007**

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| This paper compares several approaches of GNSS/INS integration. Tightly coupled and loosely coupled approaches are discussed as well as an approach that tightly integrates differential GNSS and inertial navigation with carrier phase ambiguity resolution. Hence, centimetre accuracy can be achieved with a tightly coupled system. The approach can be combined with a smoother which improves the overall system performance by means of post-processing. Measurement results show that the presented smoothing algorithm can overcome problems of poor satellite availability. It is possible to recover the trajectory during GNSS outages even together with a low-cost MEMS inertial navigation system. | |  |

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| **A.V. Chernodarov, A.P. Patrikeyev, A.Yu. Platonov, V.L. Budkin, V.P. Golikov, S.V. Larionov** | **Parametric identification for errors models of integrated navigation systems in real time mode and from data of onboard recording devices** | **17** |
| Problems that arise during use of integrated navigation systems (INS) are considered. The proposed solutions permit us to take into account any changes in dynamic and accuracy characteristics of sensors by means of the appropriate coefficients of the models of errors. Under actual conditions of INS operation, the determination of current values of the parameters of the models of sensors and of an estimation filter rely on identification procedures. The results of full-scale experiments are given, which corroborate the expediency of parametric identification of the models of INS errors in real time and from flight data. | |  |

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| Diversity of types of information faults in navigation complexes makes the development of algorithms for fault detection and isolation to be realized in the on-board computer complicated. Moreover, a complete list of possible types of faults may be unknown. Two algorithms are suggested to overcome these difficulties. The first algorithm presumes a set of types of faults to be known. It employs an augmented Kalman filter (AKF) that estimates a group of possible faults and allows the amount of computations to be reduced. It has been shown that the results of the AKF application allow derivation of a posteriori probabilities and estimates of particular faults as well as estimates of additional errors in navigation parameters caused by faults. These estimates can be used to recover the faulty system. The second algorithm does not require knowledge about types of faults and is intended to detect the system of the complex that has errors, anomalous in level and behavior, and to compensate for these errors. The efficiency of the algorithms developed is supported by the results of simulation and bench tests of the navigation complex including more than one inertial system. | |  |

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