

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
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RESEARCH OF THE MULTISYSTEM USER INTEGRITY ALGORITHM BASED ON COMBINED
GALILEO AND EGNOS

Abstract

With the development of satellite navigation systems, more and more attention has been focused on the study of its integrity. Especially in the application of Security of Life (SoL) related area, integrity is an important and challenging problem. Integrity of satellite navigation system indicates the ability of providing timely and efficient warning information, and it is one of the most important metrics in navigation systems.

In the future, integrity could be a critical factor to evaluate the performance of receiver. For multi-system users, both the performance of navigation precision and integrity can be improved due to the increase of the number of observable satellites. After the establishment of the European Galileo and the Chinese Compass Navigation Satellite System (CNSS), there is no doubt that information fusion and inter-operation in multi-system will be the development trend. Based on the concept of the integrity of the Galileo and EGNOS systems, this paper proposed an efficient information fusion algorithm for the two systems. Computation method of the integrity parameter xPL is presented for Galileo and EGNOS multi-system users, which will help the design of multi-system integrity information fusion in the future CNSS system. Simulation results for both single and multiple satellite navigation systems are compared and the conclusions are given based on the analysis of the results.