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RESEARCH ON SATELLITE-BASED AIS SYSTEM AND ITS INTEGRATED APPLICATION

Abstract

Satellite-based AIS System with its all day, long range, large area and multi-resource detected advantages is presented as a promising solution to overcome the terrestrial VHF coverage limitation with the potential to provide AIS detection service coverage in any given area in Earth. A relatively small constellation of LEO satellites can guarantee good ship position detection probability as well as a reporting time interval of a few hours. This paper presents an extension of AIS to a long-range positioning reporting through a constellation of LEO satellites, a feasible integrated application system is designed to maritime data fusion. The key technologies of propagation link analysis between satellite and ship, the high rate of message collisions from ships in the field of view of a satellite, weak signal detection are analyzed in details. The results can provide a reference to the whole system optimization.