

基于DGPS无人潜航器避碰声纳的试验研究

作者: 严浙平, 曲镜圆, 程相勤, 张伟, 徐健

单位: 哈尔滨工程大学 自动化学院

基金项目: 黑龙江省博士后启动金资助(LH-04010)

摘要:

提出一种利用双频RTK的DGPS来估算船只与障碍物距离的方法, 并采用基于HIMM数字滤波算法获取声纳系统探测障碍物的距离信息, 对比距离信息可验证声纳系统探测的有效性。利用水面船只模拟无人潜航器安装声纳系统进行了避碰功能模拟试验, 结果表明改进的HIMM滤波算法可有效降低环境背景噪声影响, 提高了声纳测量信息的可信度, 所提出的试验方法很好地解决了声纳避碰系统的前期功能试验困难, 可大大降低直接利用无人潜航器进行试验的成本和风险。

关键词: DGPS; 无人潜航器; 避碰声纳; 模拟试验

The Obstacle Avoidance Sonar of AUV Experimentation Based on the DGPS

Author's Name: YAN Zhe-ping, QU Jing-yuan, CHENG Xiang-qin, Zhang Wei, Xu Jian

Institution: Automatics School of Harbin Engineering University

Abstract:

A method is designed to estimate the distance between the ship and obstacle based on DGPS. Digital filter based on HIMM is proposed to get the distance from Sonar system at the same time. Comparing with the two distances can prove the validity of detecting information by the Sonar system. Simulation of the AUV avoidance behavior is done by the sonar system installed on the ship. Finally the test results showed that HIMM filter could effectively reduce the background noise and enhance the credibility of the sonar information. The method has solved the difficulties of sonar avoidance system in pre-test and reduced the cost and risk while directly using an AUV.

Keywords: DGPS; AUV; The obstacle avoidance sonar; Simulation Test

投稿时间: 2008-06-10

[查看pdf文件](#)