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基于圆锥向角和相位差变化率的运动单平台无源定位算法和精度分析

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Single Moving Observer Passive Localization Algorithm Using Conical Bearings and Rate of Phase Difference Change and Its Accuracy Analysis

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摘要 以往的相位差变化率定位技术中需要利用二维相位干涉仪获取方位角和俯仰角信息，出于降低平台载荷负担的需求，考虑到一维相位干涉仪系统仅能获取圆锥向角的性质，针对地面固定目标提出了一种联合利用圆锥向角和相位差变化率的一维干涉仪体制瞬时定位算法，计算和分析了定位误差的几何分布(GDOP)，并给出了蒙特卡罗仿真实验结果，并指出了干涉仪安装方向和平台姿态变化的基本原则。研究表明，这样的无源定位系统设备相对简单，但同样具有对目标的定位能力。这些有益结论可以为系统的设计和应用提供理论依据。

关键词： 无源定位 干涉仪 相位差变化率 圆锥向角 GDOP

Abstract： Due to the calculation requirements of the azimuth angle and the elevation angle, previous passive localization systems need two dimensional interferometer installation. In order to alleviate the load on the platform, the conical bearing for one dimensional interferometer system only is obtained, and a localization method applied to the ground stationary emitter is presented using the conical bearing and the rate of phase difference change. The localization geometric distribution of precision (GDOP) is computed and simulated by Monte-Carlo experiment, and the principle of interferometer heading and attitude vibration is clearly demonstrated. The investigation results show that the system is simple and has approximately the same localization ability as previous passive localization systems. The conclusions will be useful for the design and operation of such systems.

Keywords： passive localization interferometers rate of phase difference change conical bearing GDOP

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