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## 基于IFLL跟踪技术的INS/GNSS紧组合算法(PDF)

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Title: INS/GNSS Tight Integration Based on INS-aided FLL

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关键词: [INS/GNSS紧组合](#); [INS辅助FLL](#); [高动态跟踪](#); [干扰抑制](#); [数字振荡器](#)

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摘要: 为了提高复杂电磁环境下的GNSS抗干扰能力,针对低成本制导武器的特点,提出了一种基于INS辅助二阶锁频环跟踪技术的INS/GNSS紧组合算法。该算法采用紧组合结果估计载体的多普勒频率及二阶锁频环估计的残余多普勒频率,控制载波和码发生器,以降低动态应力对跟踪环路的影响。建立了紧组合滤波模型,给出了实现方法。仿真结果表明,在高动态干扰环境下该算法可跟踪载噪比为18 dB-Hz的GPS L1 C/A卫星信号,比传统高动态接收机的抗干扰能力提高了约9 dB。

Abstract: In order to improve GNSS jamming immunity for low-cost guided weapon under complex electromagnetic environment, an INS/GNSS tight coupling(TC)based on the INS-aided second order FLL was proposed. The Doppler frequency from the output of TC based on EKF and the loop filter of the second order FLL was used to control local carrier and code signal NCO, so the high dynamic performance was improved. A model of INS/GNSS tight integration filter was presented and the implementation of INS-aided tracking was given out. Dynamic simulation test shows that the TC based on INS-aided FLL can track carrier-to-noise 18 dB-Hz GPS L1 C/A signal, and the J/S level is 9 dB higher than that of stand-alone receiver.

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