

[1]范利涛,李宁宁,汤国建,等.SINS/GPS组合导航中两种惯导 误差模型的等价性验证[J].弹箭与制导学报,2009,1:27-30.

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SINS/GPS组合导航中两种惯导 误差模型的等价性验证

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Title: The Equipollence Validation of Two Inertial Error Models in SINS/GPS Integrated Navigation

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关键词: [组合导航](#); [惯导工具误差](#); [一阶惯性环节](#); [扩展卡尔曼滤波](#)

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摘要: 为减轻空间机动飞行器上计算机的负担,文中提出以一阶惯性环节模型替代惯性测量装置的惯导工具误差模型以降低SINS/GPS组合导航中状态矩阵的维数。采用扩展卡尔曼滤波器进行信息融合,分别用两种不同的模型来评估导航精度。仿真结果表明采用两种不同模型,最终的导航精度相当,用一阶惯性环节模型来替代惯导工具误差模型,可以大大减少计算时间,利于工程实现。

Abstract: To lighten the burden of the computer in an orbital maneuver vehicle, a first - order Markov process model was proposed to replace the guidance instrumentation error model, which could decrease the state matrix dimension. An extended Kalman filter was hired to fuse the information of SINS and GPS. The orbital maneuver vehicle was considered as an example which hired ring laser gyroscopes and silicon accelerometers as its inertial measurement unit. First the guidance instrumentation error coefficients were modeled as augmented states, and then the gyroscope drifts and accelerometer biases were modeled as a first - order Markov process. The two methods were used to evaluate the navigation precision. The simulation results indicate that the navigation precision is comparative. The first - order Markov process model needs less calculation time and decreases the complexity of navigation model.

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