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## 带单轴稳定惯导系统的初始对准

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### AN INITIAL ALIGNMENT SCHEME FOR THE INERTIAL NAVIGATION SYSTEM (INS) WITH SINGLE-AXILE-STABILIZATION

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摘要

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**摘要** 一、概述 带单轴稳定的惯导系统是一种为避免或减小对陀螺进动角速率动态范围要求过大,而以现有挠性陀螺为基础构成的混合式惯导系统。在这种系统中,由于有一个可以任意控制转动的稳定轴,使实现对准的方法也具有一定的特点。例如可采用的方案之一是,把稳定轴锁定,利用与纯捷联式系统相类似的方法实现对准;另一种方案则是,使惯件测量部件的横向轴围绕稳定轴调平,然后再采用闭环或开环方式估计方位角和俯仰姿

**关键词:**

**Abstract:** In this paper an initial alignment scheme for inertial navigation systems with single-axile-stabilization is proposed. The alignment process is separated into two steps. Firstly, the signal of transverse accelerometer is used to level the transvers axis around the stabilizing axis of the inertial measurement unit (IMU). Secondly, the pitch angle is calculated by using the signal of longitudinal accelerometer and azimuth angle is calculated by using the controled angular rate enforced on the stabilization gyro. Two different system construct schemes is provided, the steady state of each scheme is analysed by means of developed dynamic equations of IMU with single-axile-stabilization. The calculation methods of pitch angle and azimuth angle as well as the key influential factors on its accuracy are studied.

**Keywords:**

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