

光电工程

## 机载稳瞄控制系统模型及仿真分析

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**摘要** 瞄准线高精度稳定是机载光电稳瞄系统的主要指标和关键技术。根据四框架稳瞄系统的工作原理,以手动跟踪模式为主要研究对象,建立了稳瞄伺服控制系统模型。考虑到直升机扰动特点,对线扰动、角速率扰动、摩擦力矩、弹性力矩等各种扰动因素也建立相应的数学模型,同时在各种扰动因素作用下利用Matlab对机载高精度稳瞄系统的手动跟踪控制模式进行了仿真设计分析和理论研究,设计出适合的控制器。此模型在实际系统中获得验证,对稳瞄伺服控制系统的设计具有参考意义。

**关键词** [稳瞄系统](#) [手动模式](#) [建模](#) [仿真](#)

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## Modeling and simulation of airborne stabilized sighting system

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**Abstract** Line of sight stabilization is a key specification for stabilized sighting system. With manual tracking as research subject, the model of stabilization servo control system was established based on the concept of two gimbals, four axes design. Based on the helicopter scenario, the mathematical models were also built for disturbances such as linear disturbance, angle disturbance, friction and elastic torque. Matlab software was used to simulate the manual tracking mode of the airborne stabilized sighting system under various disturbance torques. A suitable controller was designed. The model is verified in real system and could be used in servo control design.

**Key words** [stabilized sighting system](#) [manual mode](#) [modeling](#) [simulation](#)

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