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Author: Dr. Guangde Xu
CAST, China

Mr. Zhongqiu Gou
China Academy of Space Technology (CAST), China
Dr. LIU Ning
CAST, China
Mr. Yong Zhang
China Academy of Space Technology (CAST), China

HIGH ACCURACY AND HIGH STABILITY POINTING OF SPACE TELESCOPE BASED ON
ULTRA-QUIET PLATFORM**Abstract**

Based on active vibration isolation and precision pointing control of ultra-quiet platform for space telescope, considering the dynamic characteristics of flexure jointed ultra-quiet platform, as well as the effect of base and payload disturbances, the general dynamic model of ultra-quiet platform is built. Then the decoupled control method is derived, and the multi-input and multi-output system for ultra-quiet platform is converted into single-input and single-output system, so that a more simple controller is designed to realize vibration isolation and precision pointing. Then the ultra-quiet platform is applied in space telescope, the complex dynamics model of satellite with ultra-quiet platform and flexible wings is set up. The dynamic coupling between ultra-quiet platform and the spacecraft bus is analyzed. Then the compound control method of ultra-quiet platform and the spacecraft bus is designed. On this basis, the numerical simulation analysis and verification are made. Compared with the traditional single stage attitude control, the simulation results show that the application of ultra-quiet platform can improve the pointing accuracy and stability to a large extent.