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# RESEARCH ON TDICCD IMAGING MECHANISM DURING REMOTE-SENSING SATELLITE ATTITUDE MANEUVER

**Abstract**

For some special tasks of remote sensing satellites, such as natural disaster or emergency observation, the in-orbit cameras are required to image quickly during satellite rapid maneuver (or immediately after maneuver completion) to obtain ground images accurately and promptly.

In order to guarantee TDICCD camera imaging quality and efficiency during satellite attitude maneuver, this paper first studied the TDICCD push-broom imaging mechanism during arbitrary flight path imaging. The TDICCD adaptation during flight path imaging, the requirement for camera integrating time, and the requirement for satellite attitude stability have been analyzed respectively. The traditional in-orbit push-broom imaging mechanism has secondly been analyzed and compared with side-sway imaging during satellite attitude maneuver. Then, the area array CCD imaging mechanism has been investigated for image motion detection and compensation.

Based on the above investigation, the paper finally proposed a space camera system optimization design method based on image quality. With this method, small relative aperture, ground image restoration processing, and full-chain optimization design methods have been adopted for TDICCD camera multi-mode imaging in order to obtain the required image information quickly and effectively.