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RESEARCH ON THE FAST ACQUISITION TECHNOLOGY OF MARS ORBITER'S TTC TRANSPONDER

Abstract

2016, China Mars exploration mission officially approved. China plans to launch its first Mars probe in 2020, one step closer to the surrounding, landing and patrol three detection process. Mars TTC system, composed of the Mars Orbiter and Mars Lander, Mars patrol device, to undertake the remote control, telemetry, remote control function of the orbiter, lander, patrol device three. The Mars rover's TTC transponder needs to complete the telemetry and reception of the Mars Lander, the patrol device, the remote control command, and the data injection. First in this paper, the working characteristics of the Mars TTC communication system are introduced, and the mission application of the Proximity-1 Protocol in the TTC system is described.Second,this paper focuses on the fast acquisition baseband algorithm and the realization of the TTC signal between the Mars Orbiter and the Mars Lander.Also,the realization of the high sensitivity, the rate adaptive switching and the fast acquisition is researched in detail. The research content of this paper is of positive significance to China's first deep space mission to Mars Exploration.