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RESEARCH ON PERIODIC SEARCH AND DETECTION METHOD OF X-RAY PULSAR NAVIGATION SIGNAL

Abstract

Using the signals of X-ray pulsars to achieve autonomous navigation of the spacecraft is a direction with great development potential. When the spacecraft is moving relative to the reference system, the X-ray pulsar signals it receives have a Doppler frequency shift. As a result, its period is changed relative to the standard pulse contour. In order to obtain the true pulse profile, it is necessary to estimate the accurate pulse period of the received pulse signal. After estimating the period, it is necessary to obtain the pulse contour by the period folding algorithm. The existence of the Keller effect, the pulse profile is distorted relative to the standard pulse wheel, which makes it difficult to identify the signal correlation. This paper proposes a pulse estimation algorithm, and based on this method, proposes an X with Dozener The method of ray pulse signal detection. Simulation results show that the method can accurately estimate the signal period of X-ray pulsars, and achieve signal detection, with high detection accuracy.