

论文

低轨卫星网络中基于轨道分簇的密钥更新算法

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摘要

该文提出一种基于轨道分簇的低轨(LEO)卫星网络密钥更新算法,即RAOC算法。该算法根据运行轨道特性对LEO卫星网络进行分簇,通过动态产生密钥更新发起节点和簇首节点完成LEO卫星网络的密钥更新。RAOC算法提出一种基于密钥更新锁的密钥更新状态描述方法,以确保密钥更新的一致性。仿真结果表明,与目前LEO卫星网络基于地基测控网和天基测控网的密钥更新算法相比,RAOC算法能自主完成LEO卫星网络的密钥更新,并能提高LEO卫星网络密钥更新的效率。

关键词 [卫星网络](#) [LEO星座](#) [轨道分簇](#) [密钥更新](#)

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Rekeying Algorithm Based on Orbital Cluster in the LEO Satellite Network

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Abstract

A kind of Rekeying Algorithm based on Orbital Cluster (RAOC) is proposed in the Low Earth Orbit (LEO) satellite network. The LEO satellite network is divided into different clusters according to the characteristics of the LEO satellite network in RAOC. The rekeying process is carried out by the initiating node of the LEO satellite network and the head nodes of the clusters. Rekeying lock is introduced to ensure consistency of the rekeying. The simulation results indicate that RAOC can accomplish the rekeying automatically compared with ground-based TT&C(Tracking, Telemetry and Command) algorithm and space-based TT&C algorithm, and the rekeying efficiency is improved by RAOC.

Key words [Satellite network](#) [LEO constellation](#) [Orbital cluster](#) [Rekeying](#)

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