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ON THE SECRECY PERFORMANCE OF NON-ORTHOGONAL MULTIPLE ACCESS BASED
INTEGRATED SATELLITE-TERRESTRIAL RELAY NETWORKS

Abstract

This paper studies the secrecy performance of non-orthogonal multiple access (NOMA)-based integrated satellite-terrestrial relay networks (ISTRNs), where colluding case is considered which means the eavesdroppers cooperate with each other to overhear the information. Besides, we derive the closed-form expressions for the secrecy outage probability (SOP) of the considered NOMA-based secrecy ISTRNs in the presence of the considering eavesdropping case. In order to obtain further insights at high signal-to-noise ratios (SNRs), the asymptotic expression for the SOP is also given, which provide efficient means to evaluate the benefit of NOMA scheme on the SOP. Besides, we can observe the effect of different parameters on the system performance conveniently. Moreover, we give the simulation results for the energy efficiency (EE) of the considered NOMA-based secrecy ISTRNs. At last, numerical Monte Carlo (MC) results are given to verify the correctness of the theoretical results.