National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Secrecy Performance Analysis of RIS-assisted System Under Nakagami-m Fading.
Speaker	: Richa Verma
Supervisor	: Dr. Pawan Kumar
Venue	: EC303, Seminar Room
Date and Time	: 03 Jan 2025 (10.00AM)
Abstract	: In this paper, we consider a system comprising a source node, two reconfigurable intelligent surface (RIS) nodes, a legitimate destination, and an eavesdropper. One of the two RIS sides supports the legitimate destination in enhancing its data detection capability. The second RIS side is malicious and assists the eavesdropper in overhearing legitimate communication. The system is affected under Nakagami-m fading. We analyze the secrecy performance of the system in terms of secrecy outage probability (SOP), probability of strictly positive secrecy capacity (PSPSC), secrecy ergodic capacity (SEC), and intercept probability (IP). We opt for generalized-K (KG) and mixture gamma (MG)-based approximation methods to provide an accurate analysis for an arbitrary number of RIS-reflecting elements and fading parameters. We also derive the asymptotic SOP expression to provide a simplified analysis at high signal-to-noise ratios (SNRs). The analytical results are validated with the simulated results. We also highlight some observations drawn based on the analysis.