

Seminar Title	: Overlay Satellite-Aerial-Terrestrial Networks with SWIPT-enabled Aerial Communications.
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Venue	: EC303, Seminar Room
Date and Time	: 30 Apr 2024 (03.00PM)
Abstract	: We consider an overlay satellite-aerial-terrestrial network that enables low earth orbit-based satellite-to-terrestrial (S2T) user signal transmission with the assistance of a coexisting air-to-air (A2A) network. Here, we consider that the A2A transmitter is energy constrained and thus, relies on a hybrid simultaneous wireless information and power transfer scheme (SWIPT) for its own signal transmission toward an aerial receiver lying at a random location. Specifically, the A2A transmitter first harvests energy from the radio-frequency signal received from the satellite in the first hop and then, it uses the same energy to retransmit the combined satellite and A2A signals in the second hop toward corresponding receivers. Considering the random locations for both the S2T and A2A receivers, we analyze the outage performance of both S2T and A2A networks in the presence of shadowed-Rician, Nakagami-m, and Rician fading conditions for the satellite, terrestrial, and aerial links, respectively. Herein, for the outage performance analysis of A2A network, we consider both the perfect and imperfect interference cancellation scenarios at A2A receiver. We verify the analytical results by simulations and reveal the system performance gains.