

Chapter Meeting Report: 17 December 2019: Joint SMC/AES Chapter of the Lone Star Section

The Joint SMC/AES Chapter of the Lone Star Section (formerly part of the Central Texas Section) met at noon on Tuesday, December 17, 2019 for a presentation by Patrick Ellis of Southwest Research Institute on RF Geolocation Using a Single LEO Satellite. The talk described a passive radio frequency (RF) geolocation solution using a single low earth orbit satellite to find an uncooperative earth-bound emitter. The objective was to obtain an unambiguous solution for real-time, single-pass, time-constrained acquisition scenarios from single transmissions. An algorithm rapidly maps Doppler and Doppler rate measurements to an RF emitter location. Numerical analysis over measurement noise, center frequency, slant angle, initialization error, ephemeris errors, and oscillator errors demonstrates the algorithm's robustness over various mission types. The performance of the algorithm was verified with actual LEO satellite experimental data. This work was conducted as part of the speaker's PhD thesis at UC Santa Cruz and partially supported by internal research at Southwest Research Institute.



Patrick B. Ellis

Submitted by Walter Downing.