

Old Dominion University
College of Engineering and Technology
Department of Electrical and Computer Engineering

All lectures to be held at 3:00 p.m. on Fridays in Kaufman 224. For more information, contact Dr. Chunsheng Xin at (757) 683-3741 or e-mail cxin@odu.edu. Refreshments provided after the seminar.

Friday, September 28, 2018 Seminar Topic:

**VIRTUAL SATCOM: LONG RANGE
BROADBAND DIGITAL COMMUNICATIONS**

by

**Dennis Watson, Ph.D. Candidate in the Department of
Electrical & Computer Engineering at Old Dominion University**

Abstract:

Virtual SATCOM is an innovative communication concept to allow communications at satellite communication speed and long ranges without the expensive and vulnerable space vehicle (satellite). This research studies the feasibility of communication over the horizon (2000 miles) at high speed (>12 Mbps) using a wide frequency bandwidths and narrow antenna beam systems. Currently, Satellites communications (SATCOM) systems are the only options for high speed over the horizon wireless communication. These systems are becoming more vulnerable to disruptions. Additional negatives to SACOM is the high cost to manufacture and deploy and the inability to repair and upgrade through the life of the vehicle. Virtual SATCOM uses terrestrial architecture, so it is survivable, repairable, up-gradable and affordable. It communicates via the ionosphere in the HF frequency band between 7-28 MHz. Key technologies in the system include narrow beam forming, ultra-wide bandwidth, and agile frequency adjustment.

Bio:

Dennis Watson is a Ph.D. Candidate at Old Dominion University, in the Computer and Electrical Engineering Department, doing research on long-range high throughput digital communications. Dennis is a retired Navy Officer who performed as an Electromagnetic Countermeasures Officer, Command and Control Warfare Commander and Commanding Officer of EA-6B Squadron and Navy Warship. He recently supported the development of Electromagnetic Maneuver Warfare (EMW) tactics for the Navy Warfare Development Command and Navy Information Operations Command - Norfolk. Education: Undergraduate BS in Naval Architecture from US Naval Academy. MS in Systems Engineering Naval Postgraduate School. MS in National Resource Strategy from National Defense University.