# IEEE AESS Distinguished Lecture Series

**The IEEE Germany Section, IEEE Aerospace and Electronic Systems society German Chapter, and Fraunhofer FKIE are pleased to offer two full-day tutorials. The tutorials are introductory in nature and only a basic knowledge of radar is necessary.**

## Tutorial 1: Introduction to Electronic Warfare
Thursday, October 4th 2018

Learn the technologies and algorithms behind the electronic warfare systems protecting assets, territories and human lives. Electronic warfare (EW) can be essentially divided in three categories: electronic attack (EA), electronic support (ES) and electronic protection (EP). EW is a large field spanning different domains, such as radar, communications, EO/IR, and cyber. This tutorial will focus only to EA and EP techniques applicable to radar systems, with a quick overview of IADS, surface-to-air missiles and fire control systems. Topics in EA include jamming techniques, jamming equations, anti-radiation missiles, DRFM, and SAR/ISAR jamming. Topics in EP are divided according to the radar subsystem engaged in the protection, such as transmitter, antennas, receiver, and signal processing, including techniques countering pull-offs and deceptions. The course is taught at an unclassified level.

## Tutorial 2: Electronic Support, ELINT and Radar Reverse Engineering
Friday, October 5th 2018

This tutorial continues the EW discussion by exploring its intelligence aspect, with a focus on radar systems. The course begins with the CONOPS, theories and techniques used in electronic support missions, with an emphasis on radar warning receivers. This includes an overview of signal detection and estimation, signal identification and direction finding. Next, the course explores concepts and techniques used in electronic intelligence, in particular signal processing and the time/frequency analysis. The final part of the tutorial will focus on determining RF/hardware properties using remotely collected data, such as signals and images. Using both signal and hardware clues, the intelligence analyst will be able to identify the capabilities and performance of a radar. The course is taught at an unclassified level.