



The 14th European Radar Conference

Duration: 08:30 - 12:30

Room: Neu Delhi

SF-03

Noise Radar Technology

Organisers:

Krzysztof Kulpa, Warsaw University of Technology, Poland

Gaspere Galati, Tor Vergata University, Italy

Abstract

The noise and pseudo-noise radars are under research for several decades. Two decades ago mostly theory has been developed. In the last decade several demonstrators with off-line processing have been constructed. Recently, due to maturity of the concept, radar prototypes are under considerations.

The noise radar has several advantages - there is neither range nor Doppler ambiguities, applied noise signal is very unspecific, and thus difficult to detect and classification and noise radars do not interfere with each other and also with other devices using the same spectrum. As the illumination of the target is rather long, they can be used not only for target detection, but also for imaging and identification. But they have also several drawbacks: they require very high dynamic range of the receivers, advanced algorithms, and high computational power of processing hardware.

The short course will start with fundamentals of noise radar technology, shows how to use this technology in MIMO applications, how to modify noise waveforms to obtain required signal properties in SISO and MIMO radars. In the second part of the short course, the application of the noise radar will be presented and deep discussion on noise versus quantum radar will be provided.

Programme

08:30 - 09:10 Noise Radar Technology - New Challenges

Krzysztof Kulpa, Warsaw University of Technology, Poland

09:10 - 09:40 MIMO Techniques in Noise Radar

Lukasz Maslikowski, Warsaw University of Technology, Poland

09:40 - 10:10 Waveform Design as a Method for Clutter Cancellation

Janusz Kulpa, Warsaw University of Technology, Poland

10:10 - 10:50 Break

10:50 - 11:40 Noise Radar Technology: Motivations, Potential Applications, Ongoing Research

Gaspere Galati, Francesco De Palo, Tor Vergata University, Italy

11:40 - 12:30 Noise Radar, Entanglement Signals and 'Quantum Radar'

Konstantin Lukin, NASU, Ukraine