

Detection and Characterization of Shielded Threats using Low-Field Nuclear Magnetic Resonance Signatures

OVERVIEW

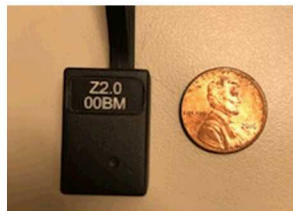
- Investigating the use of nuclear magnetic resonance (NMR) signatures collected at Earth's field to detect and characterize shielded threats, including special nuclear material (SNM) and explosives

METHODS

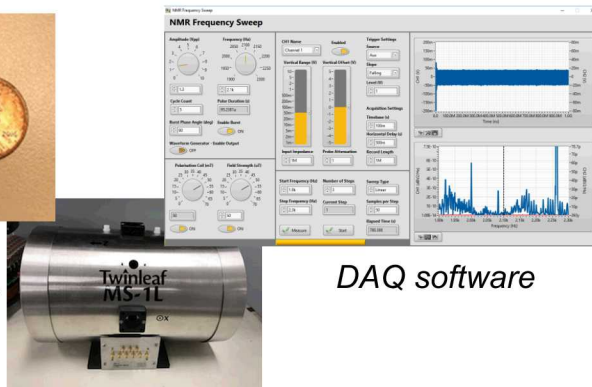
- Characteristic Larmor frequencies at Earth's field are $\lesssim 2$ kHz
- Low-frequency fields can penetrate conductive shielding
- Atomic magnetometers with sensitivities in the pT-fT range can be used to detect low-magnitude NMR signatures

RESULTS

Standing up low-field NMR testbed



*atomic
magnetometer*

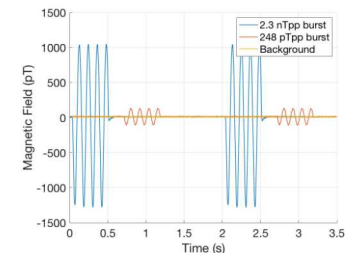
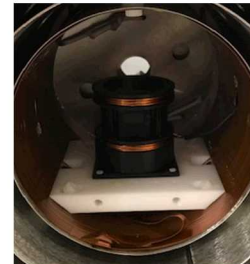


DAQ software



magnetic shielding

Low-magnitude field pulses



Poster 11A

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