

"SubNyquist Electronic Surveillance"

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The problem of efficient sampling of wideband radar signals for Electronic Surveillance (ES) will be revisited in this talk. Wideband radio frequency sampling generally needs a sampling rate at least twice the maximum frequency of the signal, i.e. Nyquist rate, which is generally very high.

However, when the signal is highly structured, like the wideband radar signals, we can use the fact that signals do not occupy the whole spectrum and instead there exists a parsimonious model in time-frequency domain.

Here, we use this fact and introduce a novel low complexity sampling framework, which has a recovery guarantee, assuming that received RF signals satisfy a particular structure. The proposed technique is inspired by the compressive sampling of sparse signals and use a Multi-coset (MC) sampling setting, while it does not involve a computationally expensive reconstruction step. Some simulation results show that the proposed sub-Nyquist sampling technique satisfactorily works with real ES signals.