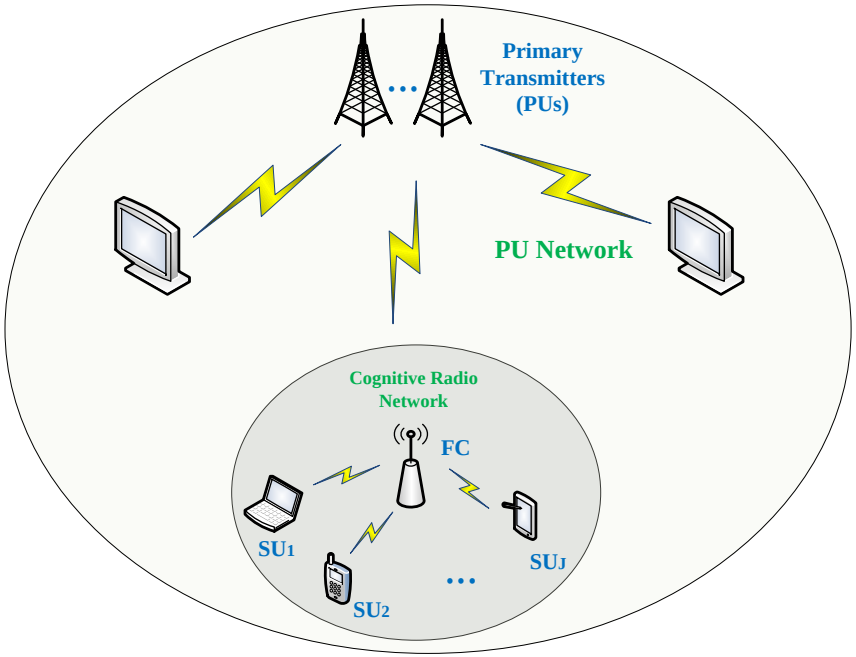
Reliable and efficient sub-Nyquist wideband spectrum sensing in cooperative cognitive radio networks

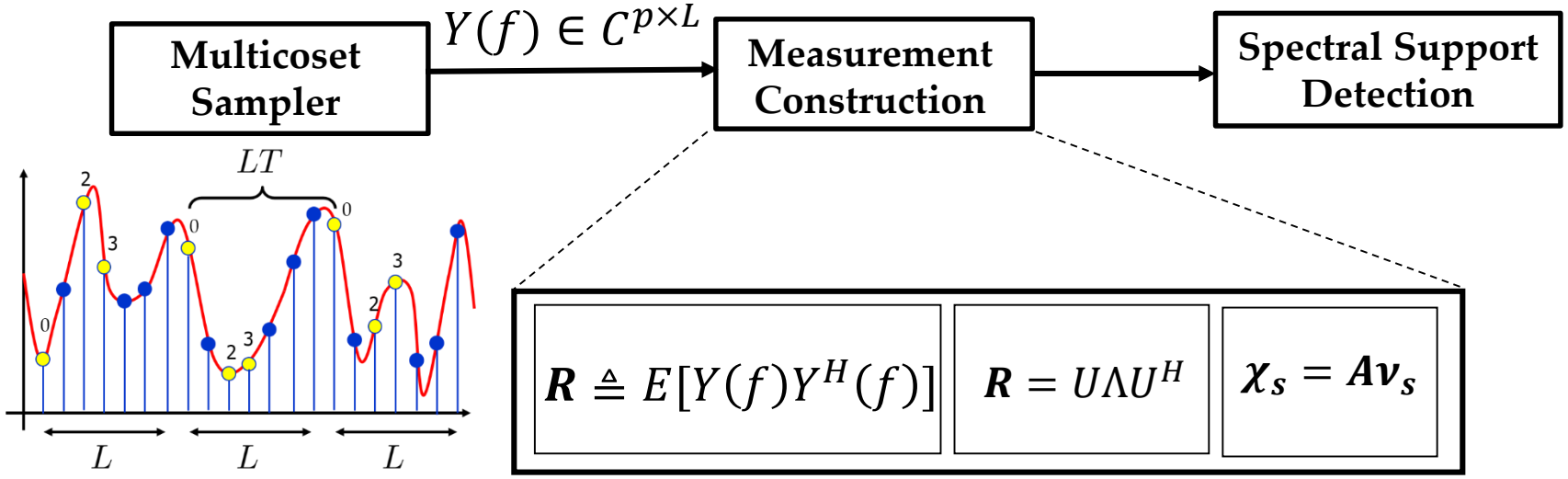
Yuan Ma

- Efficient Sub-Nyquist Wideband Signal Acquisition
- Accurate Detection with Low Computation Complexity
- Real-world TVWS Signal Analysis



Proposed approach

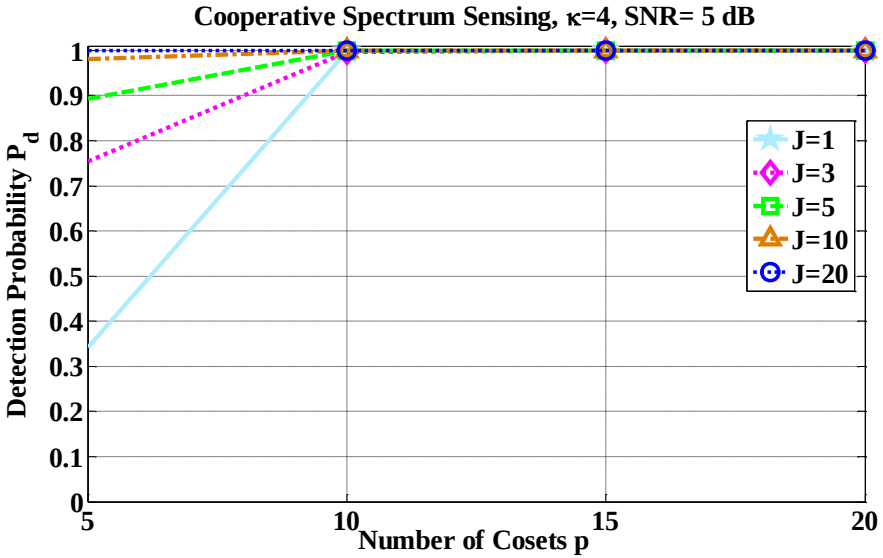
- Blind sub-Nyquist wideband signal acquisition through multicoset sampling;
- Low-dimensional measurement matrix construction based on subspace decomposition;
- Joint sparse recovery by fusing measurements shared among the SUs to reach a global sensing decision with enhanced accuracy.



Results and conclusion

- Reduced energy consumption on wideband signal acquisition, processing, and transmission with detection performance guarantee;
- Reliable cooperative spectrum sensing achieved at the Landau's rate.

Approach	*Transmission Overhead*	*Local Computation Complexity*	*Global Computation Complexity*
SOMP [30]	$O(\kappa N)$	–	$O(\kappa^2 NLJ)$
DOMP [27]	$O(\kappa)$	$O(\kappa^2 NL)$	$O(\kappa JlogJ)$
SA-SOMP	$O(\kappa^2)$	$O(\kappa^2 N + \kappa^3)$	$O(\kappa^3 LJ)$



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