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RECENT TRENDS IN MULTIFUNCTIONAL FILTERING ANTENNAS

MULTIFUNCTIONAL FILTERING ANTENNAS

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SUMMARY:

Modern RF systems often require multiple antennas to support various frequency bands. Reconfigurable antennas address this need by providing frequency agility, compact size, and reduced hardware complexity. The proposed antenna achieves this through electrical reconfiguration enabled by the embedded SRRs and PIN diodes.

The techniques proposed in this work have been implemented on two types of UWB antennas, a printed monopole antenna and a printed antipodal tapered slot antenna (ATSA) to validate the concept on radiators with distinct radiation characteristics: omnidirectional and directional, respectively. In both cases, split ring resonators (SRRs), magnetically coupled to the CPW feed line, function as band-stop filters, introducing a frequency notch in the UWB response around their resonance. When a set of PIN diodes embedded in the feed line are forward biased (ON), the antenna transforms into a narrowband band-pass filter centered at the same resonance frequency, thereby realizing complementary frequency responses from a single antenna structure.

A key feature of the design is that it preserves the original radiator geometry. The work demonstrates a compact, versatile, and effective approach to achieving multifunctionality in UWB antennas. The integration of reconfigurable filtering into the feedline enables real-time switching between wideband and narrowband operation, making the design especially suitable for cognitive radio, multi-standard wireless systems, and MIMO applications.

Date and Time

Date: **27 Apr 2026**
Time: **02:00 PM EDT to 03:00 PM EDT**
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Registration

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Ends **27 April 2026 03:00 PM EDT**
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Speakers

Dr. Jawad of Queen's University

Topic: Recent Trends in Multifunctional Filtering Antennas