



Shaping Beams, Shaping Futures: Phase-Controlled Phased Arrays for Communication and Radar

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Wednesday, Sept. 3rd @ 2:00 pm in BRK 1001

Coffee and snacks served before seminar

also on [MS Teams Link](#)

Abstract: Phased arrays with digitally controlled phase offer a powerful and flexible platform for next-generation wireless communication and radar systems. Unlike conventional architectures that rely on bulky or power-hungry phase shifters, phase-controllable phased arrays integrate compact, low-power circuits with precise digital tuning. This talk will highlight recent advances in all-digital PLL-driven phased arrays, demonstrating their ability to enable resilient, wideband communication links and agile radar front-ends. Applications in 5G/6G networks and sensing will be discussed, with a focus on how phase-controllable integration unlocks new trade-offs in power efficiency, scalability, and system-level reconfigurability.

Beyond performance gains, these architectures also offer unique opportunities for robustness against interference and jamming, making them well-suited for secure communication and defense applications. Their compatibility with heterogeneous integration further accelerates the path toward compact, energy-efficient, and reconfigurable systems. The seminar will conclude with a discussion on future directions, including the extension of these ideas to higher frequency bands and the role of advanced packaging in shaping the next generation of phased array technology.

Bio: Saeed Mohammadi is a Professor of Electrical and Computer Engineering at Purdue University. His research focuses on RF and mixed-signal integrated circuits, phased array systems, and advanced integration for communication and sensing. He has led projects on 5G/6G front-ends, chiplet integration, and novel circuit topologies, and has supervised numerous PhD students during his two decades at Purdue.