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Progress in Developing a Portable Microwave Breast Cancer Sensing System for Resource-Limited Settings

Thursday 12 June 2025 14:15 (45 minutes)

Breast cancer remains a leading cause of cancer-related deaths worldwide, with mortality disproportionately affecting resource-limited regions due in part to limited access to effective screening tools. This presentation will cover our decades-long design, development, and evaluation of microwave sensing/imaging (MWI) systems, with the goal of developing an affordable portable medical device for breast cancer detection tailored for use in resource-limited settings. The system leverages advancements in system design, physics-informed image reconstruction, machine learning and low-cost hardware to offer a safe, efficient, and accessible alternative for breast cancer detection. Preclinical testing on MRI-based tissue-mimicking phantoms demonstrates promising diagnostic accuracy, stability, and suitability for use in diverse environments. These findings underscore the potential of MWI to transform early breast cancer detection strategies and reduce global health disparities.

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