

## Rutgers ECE Colloquium

### Enabling Sustainable Sensor Networks with RF Backscatter

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Wednesday, October 5, 2022 | 10:20 AM | CAIT Auditorium



**Dr. Colleen Josephson**

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**Abstract:** We need affordable and innovative sensing to assist in tackling global-scale problems like sustainably feeding the next billion. RF backscatter systems such as RFID are well-known in the sensing community because of their low power consumption. This talk explores how we can enable robust indoor/outdoor RF-backscatter sensing by leveraging advances in low-power embedded systems. It will describe the challenges faced in low-power and sustainable sensor networks, and provide an overview of an outdoor radar backscatter sensing system that uses RF to measure soil moisture with accuracy comparable to state-of-the-art commercial sensors, but at a fraction of the cost. Also to be discussed is recent work on renewably powering outdoor sensor systems via energy harvested from non-traditional sources like microbes.

**Bio:** Colleen Josephson is an Assistant Professor at UC Santa Cruz, where she leads the [jLab in Smart Sensing](#), and is actively recruiting PhD students and postdoctoral researchers. Her research interests include wireless communication and sensing systems, with a focus on technologies to enable and improve sustainable practices. She also chairs the GreenG and Societal and Economic Needs Working Groups within the ATIS NextG Alliance, which aims to position North America as the global leader in sustainable next-generation mobile networks. Colleen completed her PhD in Electrical Engineering at Stanford University. Before beginning her PhD, she worked at Cisco Meraki as a wireless engineer, and even before that she received her SB and MEng degrees from MIT. Her recent recognitions include being named a 2022 N2Women Rising Star in Networking in Communications, a 2020 Rising Star in EECS, and in 2019 she was a finalist in the MIT Bay Area Research Slam.