

## Session 4: FPGAs and Programming Models

# **FPGA's at the Edge: Efficient 5G Communication and Security Considerations**

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### **Abstract**

I will discuss our work on developing a platform for using FPGAs for 5G communications in the sub-6 GHz band. The goal of this platform is to make it easier for researchers in the field to experiment with hardware at the physical layer that meets real-time constraints. Our platform is aimed at IoT, specifically device-to-device communication, and supports asynchronous communication, frequency and timing offset considerations, and takes into account transmission from nearby interferers. The platform is developed using Simulink for ease of programming and targets Xilinx FPGAs coupled with an RF frontend. We also are investigating enabling secure transmission such that an eavesdropper will not be able to intercept sensitive data using processing on the FPGA. These techniques will also be presented.