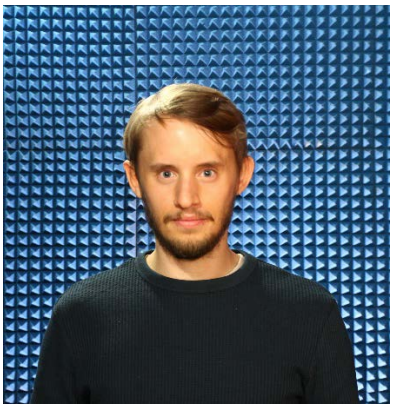
PhD Oral Defense

Date: **18 August 2021 (Wednesday)** **Time:** **10:00am**

Thesis Title

Design of Dielectric Resonator Antennas with Dielectric Paste



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Abstract

Dielectric resonator antennas (DRA) have been researched extensively in the past. Despite their utility and versatility, one of their major drawbacks is the difficult manufacturing process. A shaped dielectric block is required, which imposes additional manufacturing complexity and cost. In recent years, substrate integrated DRAs (SIDRA), which can be fully implemented using standard printed circuit board (PCB) substrates and manufacturing methods, have been investigated. Even though, SIDRAs enable a direct integration of DRAs into the PCB process, SIDRA designs are quite limited by the PCB substrate choice, PCB manufacturing process and the restriction to planar designs.

In this thesis, two novel methods for designing DRAs and SIDRAs are developed. In order to improve the design flexibility of SIDRAs and low profile, PCB-based DRAs, dielectric vias are investigated. Utilizing the dielectric vias technique, the dielectric constant of PCB substrates can be manipulated resulting in increased design freedom. Furthermore, application of a dielectric paste for DRA designs is investigated. Whereas traditional DRA manufacturing relies on reshaping solid, ceramic blocks, the dielectric paste approach requires only a mold into which the dielectric paste is inserted.