

Thesis Topic

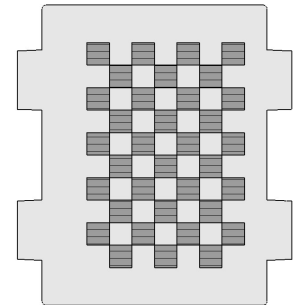
The CEM team offers the following topic

"Synthetic Measurements of Wave Computers in CST"

to be chosen by a student and elaborated as the final thesis.

DESCRIPTION

Implement a MATLAB code that automatically generates a particular layout of the microwave computer in CST, initiates the simulation, and collects the results. The possible layouts consist of teflon building bricks of fixed dimensions. The developed procedure aims to iteratively estimate the system matrix based on the large data set of synthetic measurements conducted in CST. Additionally, the manufactured device is available to assess the accuracy of this estimation process.



CONTEXT

The topic will be solved within the prestigious Junior Start project of the Czech Science Foundation.

Collaboration with the members of the group is expected.

PREREQUISITIES

Knowledge of programming and basic knowledge of microwave theory is expected.


REWARD

There is a monthly financial reward of ~8.000 CZK (before tax) associated with the topic elaboration.

LITERATURE

- [1] Estakhri, *et al.*: Inverse-Designed Metastructures That Solve Equations, *Science*, vol. 363, pp. 1333–1338, 2019.
- [2] Simulia CST Studio Suite 2023, Dassault Systemes.

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Surface current density on two plates, $ka = 0.5$.
The 4th mode of $\mathbf{X}_0 \mathbf{I}_n = \lambda_n \mathbf{R}_0 \mathbf{I}_n$ decomposition is depicted.