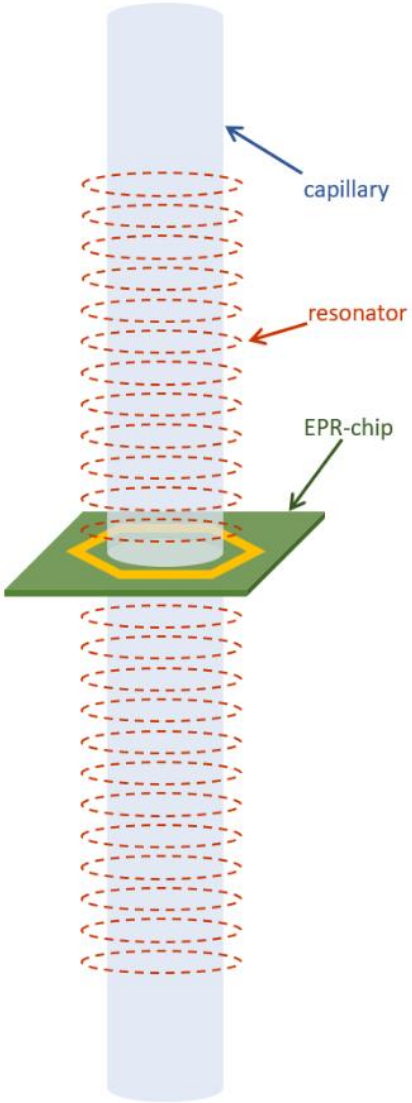
Universität Stuttgart
Institut für Intelligente Sensorik und
Theoretische Elektrotechnik

Research Project: Design of a 14 GHz Resonator for EPR applications

The IIS is developing chip-based EPR sensors (electron paramagnetic resonance). The chip-based approached is novel for EPR technologies. Conventional EPR spectrometers are costly and large, while our sensor systems are cheap, small and handy. This novel type of EPR spectrometers open up new applications area, which we are investigating and building measurement systems for.

In this project, you will design a resonator for a novel VCO-based EPR chip. The chip is targeted to be used in measurements with capillaries as sample holders. To enhance the active sensing volume and the concentration sensitivity, we want to implement a cylindrical resonator surrounding the capillary, which couples to the VCOs and extends the sensing area.



Design concept of the resonator for the EPR-chip – capillary measurement

Requirements:

- ✓ Basic experience in CST studio or COMSOL simulations is *preferred*
- ✓ Independence and personal initiative at work is *mandatory*

Duration: 3-6 months

What we expect: Motivation, dedication as well as the initiative and innovation to contribute with own ideas.

What we provide: Access to state-of-the-art simulation tools and various instruments for fabrication and testing (such as novel 3d printers and laser structuring or milling). The project focus can be adjusted to your personal research interests.

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