

Bachelor/Project Thesis

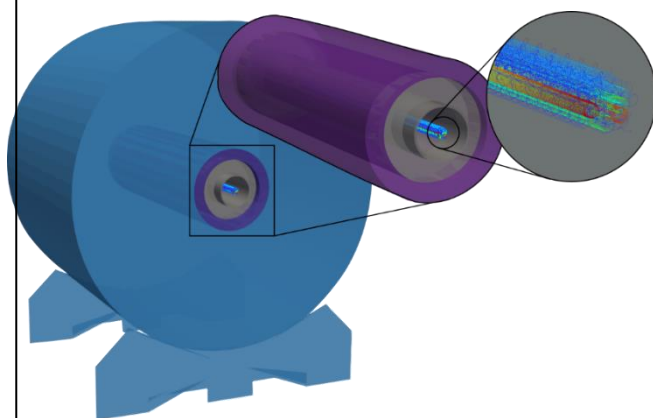
RF, Signal and Noise Measurements for the CREscent Experiment

October 2021

The primary goal of the thesis is to precisely measure the properties of an RF cavity, as well as the RF noise floor and background signals in the vicinity of the CREscent experiment.

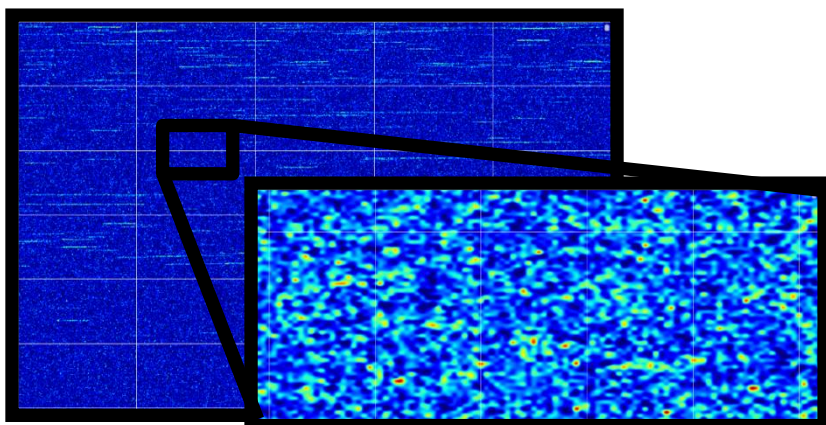
The CREscent experiment is a novel idea for a detector measuring electron energy. In this detector, the energy of electrons is not measured via absorption in a calorimeter, but via the cyclotron radiation emitted by electrons in a magnetic field (CREs).

The CREscent experiment is developed within the framework of the PERC-project, a collaboration between the Neutron & Quantum Physics Group of the Atominstytut, the University of Heidelberg, the Technical University of Munich and the Institute Laue-Langevin in Grenoble.



The emitted cyclotron radiation signal is very weak (in the order of attowatts). Fundamental understanding of the noise floor and background in the vicinity of the experiment is therefore imperative.

During the course of the thesis you will gain knowledge in RF techniques and signal processing, learn how to work with network and signal analyzers, as well as gain basic laboratory skills.



Possible start date of the thesis:

Fall/Winter 2021/22

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