The European Organization for Nuclear Research (CERN) is building a new 750 MHz RFQ (radio-frequency quadrupole) called ELISA-RFQ. It will be a central exhibition object in CERN’s upcoming Science Gateway outreach center, allowing the general public to observe a live proton beam in air.

During and after construction, you will carry out radio-frequency (RF) and bead-pull measurements to assess spectral properties and field quality. You will tune the RFQ to the desired frequency and field distribution using movable slugs. Lastly, you will measure and adjust the RF power coupling.

Tasks
❖ RF measurements using a vector network analyzer
❖ Tuning of the RFQ using movable pistons and bead-pull measurements
❖ Simulation of electromagnetic fields in the RFQ using commercial 3D codes
❖ Documentation of the results & possibility to write your Master Thesis

Requirements
❖ Profound knowledge of electromagnetic field theory
❖ Programming skills in a high-level language like Python or MATLAB
❖ Ideally first measurement experience with RF equipment

CERN Technical Student Programme
❖ Apply under http://careers.cern/students, Deadline: 24 March 2021
❖ Your workplace: CERN, Geneva, Switzerland
❖ Includes full stipend to cover living costs in the Geneva area and a travel allowance
❖ Contract duration of ca. 6 months, starting around September 2021

Contact
Dr. Alexej Grudiev (alexej.grudiev@cern.ch)
Dipl.-Ing. Hermann Pommerenke (hermann.winrich.pommerenke@cern.ch)