



Bachelor thesis/Intern student project **Development of low-noise diode lasers**

Quantum Electrodynamics (QED) is seen as the best tested theory in all of physics and has served as the blueprint for any other quantum field theory. We plan to perform a high precision measurement of the $1s-2s$ transition frequency in He^+ using optical frequency combs. The results can be compared with the theoretical prediction and will serve as a stringent test of the QED theory. In order to perform high precision spectroscopy, the spectroscopy laser which excites the target transition should have high spectral purity with low phase noise. External cavity diode lasers are a widely used laser technology for such applications. The goal of this bachelor/Intern student project is to develop a new type of external cavity diode laser with low phase-noise. The student is expected to assemble the laser system and evaluate the phase/amplitude noise for different laser-cavity configurations and different operation parameters. The experimental work will take 2~3 months and can be a project for a Bachelor thesis. A motivated Intern- or working- student could also participate in this experiment.

If you are interested, please contact:

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A part of the experimental setup for He^+ spectroscopy
