THz range spectroscopy of chiral superconductors

Summary

National Institute of Chemical Physics and Biophysics, THz spectroscopy group offers a 4-year PhD position in spectroscopy and solid-state physics.

Research field:	Physical Sciences
Supervisors:	Urmas Nagel Toomas Rõõm
Availability:	This position is available.
Offered by:	National Institute Of Chemical Physics And Biophysics
Application deadline:	Applications are accepted between June 01, 2020 00:00 and July 03, 2020 23:59 (Europe/Zurich)

Description

The proposed PhD work will focus on studying chiral superconductors possess non-trivial topological properties resulting in superconducting order parameters that may break time-reversal symmetry. We use THz spectroscopy as the main tool. We study fundamental physical properties of complex novel materials that may have high-tech applications. We collaborate with leading theoreticians and crystal growers in the field. The obtained information is useful to build theoretical models that describe microscopic mechanisms, needed to design new materials in the future.

The PhD candidate will participate in the development and use of a new generation of spectroscopic instrumentation in the sub-THz frequency range that is comparable to the gap magnitude of many unconventional superconductors. Unconventional superconductivity is an active field of condensed matter research, where the theoretical models can be experimentally differentiated by the predictions they make for the symmetries of the superconducting order parameter.

Qualifications

The applicants should fulfill the following requirements:

- The PhD candidate must have taken courses on quantum mechanics and solid-state physics at Master's level
- The PhD candidate will work in the laboratory, plan and perform the experiments, analyze results, and write papers

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