Physics Colloquium
Superconducting quantum interference devices (SQUIDs) for precision physics experiments by measuring very weak magnetic fields from DC to GHz

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Abstract:
Superconducting quantum interference device (SQUID) is a sensitive magnetic sensor of magnetic flux signals from near DC to GHz frequency range, and SQUIDs have been used to various precision measurements. SQUID can detect any physical quantity which can be converted into magnetic flux, such as magnetic moment, current, magnetic field, displacement, and microwave power, etc. Application area of SQUIDs is quite diverse from medical diagnosis to fundamental science. In the talk, developments of SQUID systems for medical diagnosis have been done at KRISS, and new plan of developing SQUIDs for precision physics experiments will be introduced. For the medical science, measurements of magnetic fields from brain or heart can provide accurate information for the functional diagnoses of the brain or heart. And magnetic resonance imaging at micro or milli tesla field strength is also possible using the SQUID technology. In the fundamental physics, attempts to measure weak microwave signals from axion radiation, magnetic field from axion-mediated interaction (ARIADNE) and weak magnetic fields for monitoring proton beam position in the proton electric dipole moment measurement are underway.

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12:00-1:00 pm
Goudsmit Conference Room, LP 208