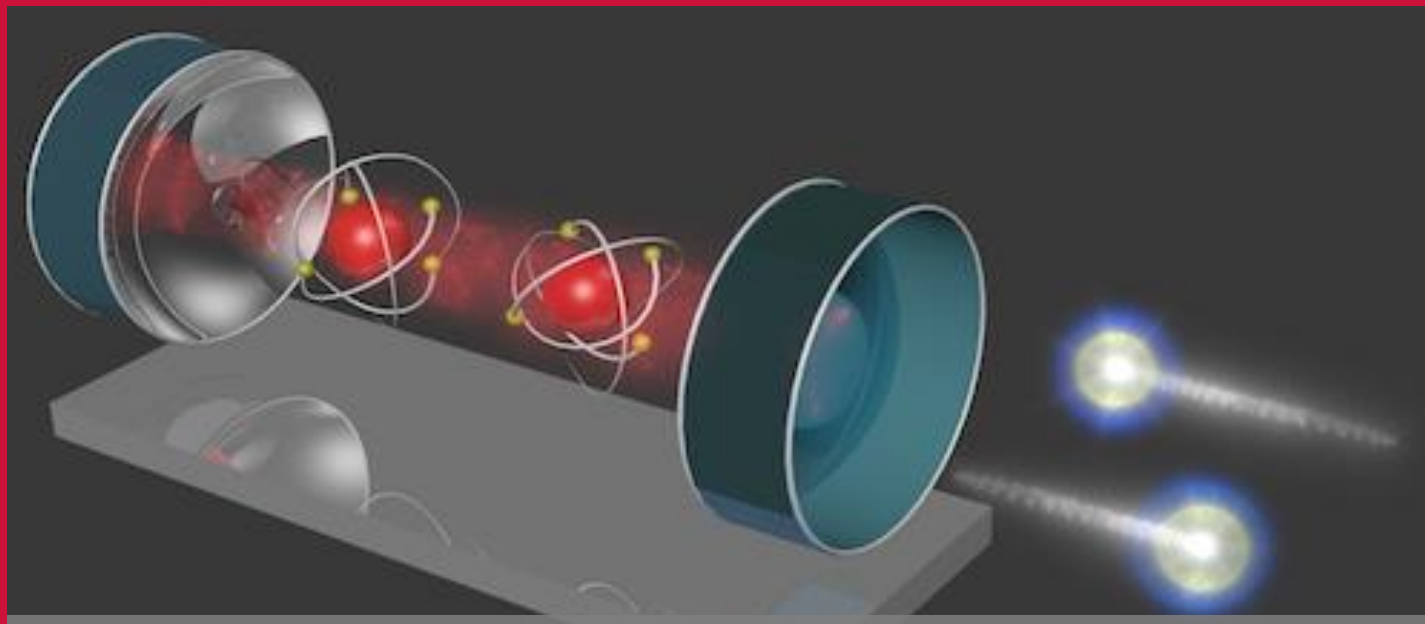
PHYSICS DEPARTMENT

SEMINAR

Wednesday, March 20, 14:00-15:00

Physics Department- H Block Seminar Hall



Microwave-to-Optical Transducer for Quantum Technologies

Recent impressive progress in quantum computers is based on cryocooled superconducting qubits with working frequencies in microwave range. On the other hand, long-range quantum communications, which already found commercial applications, are based on the use of optical photons which provide high fidelity transfer at room temperature. There is a strong technological need to connect cryo-cooled microwave quantum processors by long-range optical networks. Therefore, essential research efforts are concentrated on the development of quantum hybrid systems for up/down coherent frequency conversion of quantum information from the optical to the microwave domain and vice versa.

As a research effort in this direction, development of magnon-based quantum hybrid systems for coherent conversion between microwave and optical frequency domain will be dicussed in this talk.

Keywords: quantum hybrid converter, yttrium iron garnet, magnon-photon coupling strength, conversion efficiency

Speaker: **Asst. Prof. Dr. S. Çiğdem Yorulmaz**

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Çiğdem Yorulmaz obtained her Ph.D. degree in 2014 in Quantum Optics from Leiden University, the Netherlands. She works as a researcher on NATO SPS project for designing and developing a planar opto-magnonic quantum hybrid structure for efficient frequency conversion from microwave to near-infrared optical range. Her research interest inludes cavity quantum electrodynamics, high-dimensional multiphoton entanglement, ghost imaging, two-photon absorption microscopy, stimulated Raman scattering.