



INVITATION

to a TALK by

Prof. Karl Berggren

MIT

Detection with Superconducting Nanowires: From Single Photons to Dark Matter

Thin films of highly disordered superconductors (like niobium nitride) exhibit enormous kinetic inductance at low frequencies, a property they share with other plasmonic materials. Their effective "magnetic" (not actually due to magnetic field) permeability is thus hundreds of times the permeability of free space. The direct consequence of this is a speed of signal propagation of a few percent of the speed of light and a characteristic impedance much larger than the 377Ω impedance of free space. These extreme properties make these systems ideal for a range of applications in single-photon detection, digital and analog electronics, and even dark-matter detection. These devices have also enabled recent experiments ranging from loop-hole-free tests of Bell's inequality to development of integrated photonic qubits for quantum information processing. I will review these results, and talk about the potential of these materials for realizing future advances.

Wednesday, January 29th, 2020
16:00

Christian-Doppler-HS
Boltzmannngasse 5, 1090 Vienna

Hosted by: Thomas Juffmann