

"Superconducting Nanowires for Single-Photon Detection, Electronics, and Microwave Plasmonics"

Traditionally, superconducting devices have focused primarily on Josephson junctions, but in fact nanowires can also produce complex nonlinear behaviors that can be used for information processing. In addition, superconducting nanowires are excellent single-photon detectors, providing picosecond-scale timing resolution and quantum efficiencies that exceed 90%. Nanowires can furthermore be used to process information by conventional digital or analog means, by taking advantage of the complex electro-thermal and electro-galvanic response of the system. And now, we have started to exploit the fascinating and unique microwave characteristics of these devices to develop novel signal-processing systems. In this talk, I will introduce these nanowires and describe their properties and applications.