



CRETE CENTER FOR
QUANTUM COMPLEXITY
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ΣΕΜΙΝΑΡΙΟ ΚΕΝΤΡΟΥ ΚΒΑΝΤΙΚΗΣ ΠΟΛΥΠΛΟΚΟΤΗΤΑΣ & ΝΑΝΟΤΕΧΝΟΛΟΓΙΑΣ/
CCQCN SEMINAR

Thursday, 16 October 2014

12:30-13:30

3rd Floor Seminar Room

Smaller, Faster, Colder: Superconducting Metamaterials

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Abstract

We summarize progress in the development and application of metamaterial structures utilizing superconducting elements. After a brief review of the salient features of superconductivity, the advantages of superconducting metamaterials over their normal metal counterparts are discussed. These include the low-loss nature of the meta-atoms, their compact structure, their extraordinary degree of nonlinearity and tunability, magnetic flux quantization and the Josephson effect, quantum effects in which photons interact with quantized energy levels in the meta-atom, as well as strong diamagnetism. We then present the unique electromagnetic metamaterial structures that have been realized and studied. Finally we discuss novel applications enabled by superconducting metamaterials, and then mention a few possible directions for future research

