



CRETE CENTER FOR
QUANTUM COMPLEXITY
AND NANOTECHNOLOGY

ΣΕΜΙΝΑΡΙΟ ΚΕΝΤΡΟΥ ΚΒΑΝΤΙΚΗΣ ΠΟΛΥΠΛΟΚΟΤΗΤΑΣ & ΝΑΝΟΤΕΧΝΟΛΟΓΙΑΣ/
CCQN SEMINAR

Monday, 16 June 2014

15:00-16:00

3rd Floor Seminar Room

Self-induced transparency on quantum metamaterials

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Abstract

We study the propagation of electromagnetic waves in quantum metamaterial built up of a collection of the superconducting charge qubits placed inside the superconducting resonator. Propagation of the electromagnetic wave in such system is described by the set of nonlinear Maxwell - Bloch equations which were solved under the resonance condition: ie provided that the frequency of electromagnetic wave is equal to the frequency of the transition of the qubit between the excited and ground state. Under these circumstances we have demonstrated the self-induced transparency electromagnetic pulse propagation in quantum metamaterial. Our predictions are in close correspondence with the two-photon self-induced transparency in three-level active media.

