



ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

PHYSICS COLLOQUIUM

Friday, 10 October 2014

17:00 -18:00

3rd Floor Seminar Room

“A quantum Otto engine with spin squeezing”

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Abstract

We have recently proposed a four-level quantum Otto engine of two spins subject to an external magnetic field and coupled to each other by a one-axis twisting spin squeezing nonlinear interaction. In this talk I will first introduce the basics of quantum thermodynamics and spin squeezing, then explain our recent results [1]. In particular, I will discuss the effect of quantum correlations, as determined by the entanglement of formation and quantum discord, on the work extraction and efficiency. The question is still controversial and open if the quantum correlations could enhance the efficiency and work extraction, though according to our recent results spin squeezing leads to regimes where strong interplay between quantum correlations and positive work can be revealed.

[1] F. Altintas et al., Phys. Rev. E 90, 032102 (2014).