

# BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA



INSTITUTO DE FÍSICA  
“Luis Rivera Terrazas”



SEMINARIO EXTRAORDINARIO  
“DR. JESUS REYES CORONA”

## “Stationary entanglement and current correlations in solid state charge qubits”

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One of the fundamental aspects in Quantum Information and Quantum Computation is the generation of entanglement between spatially separated qubits. In this talk I will present theoretical results revealing that bosonic degrees of freedom are able to generate entanglement between two non-interacting solid state qubits. The qubits are defined on the charge states of double quantum dots which are also coupled to electronic contacts. In a first example, bipartite entanglement in the steady state is obtained by means of a bath of phonons surrounding the quantum dots [1]. In a second example entanglement is generated by the coupling of both qubits to a single mode of an electromagnetic resonator. Furthermore, in this case we also discuss shot noise cross-correlations as an indicator of the entanglement between the qubits in such a novel circuit-QED architecture [2].

[1]. L.D. Contreras-Pulido and R. Aguado, Phys. Rev. B, 77, 155420 (2008)

[2]. L.D. Contreras-Pulido et al., New J. Phys. 15, 095008 (2013)

**Auditorio-IFUAP**

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**17:00 Hrs.**