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ΔΙΑΛΕΞΗ

**“Magnetocurrents through linear quantum-dot arrays using
parallel computing techniques”**

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Αίθουσα σεμιναρίων στο ισόγειο του ΕΙΕ

ABSTRACT

Exponential miniaturization in the size of electronic devices, well known as Moore's law, establishes the functionality of these devices precisely in the regime where the Ohmic law is suppressed, leading to hybridization of the existing technology with quantum effects and ultimately to the design of novel devices solely based on the latter. From this perspective, we are going to present an investigation of currents induced in linear arrays of quantum dots which can be magnetically controlled. Design and understanding of the physics of such mesoscopic devices demands for enhanced computational cost and makes necessary the use of parallel algorithms. In this spirit, in the second part of the talk, we are going to present a parallel algorithm for the evaluation of quantum transport properties which will be based on a combination of algorithms of parallel linear algebra and processors' cyclic reduction.