

FOMO Lectures 2021

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Theoretical investigation of the impact of semiconductor quantum dots on the morphology of wetting-layer states

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Abstract:

The excitation of semiconductor quantum dots often involves an attached wetting layer with delocalized single-particle energy eigenstates. These wetting-layer states are usually approximated by (orthogonalized) plane waves. We will discuss why this approach even in the simplest case of one (lens-shaped) quantum dot on the wetting layer is insufficient. Quantum states associated to the wetting layer were not expected to show an irregular spatial structure. Differences are also observed with respect to the corresponding energy levels of the system which can be statistically characterized with concepts from the field of quantum chaos.

Keywords: semiconductor quantum dots, quantum chaos

Publication Link:

[Morphology of wetting-layer states in a simple quantum-dot wetting-layer model](#), J. Phys.: Condens. Matter 32, 075301 (2020) - OPEN ACCESS