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Abstracts of Short Communications and Posters

Section:

16. Applications

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Modeling of QW–Lasers including Schrödinger–Poisson systems.
Modeling semiconductor lasers has to face the electronic behaviour of the semiconductor, the optical field, and the interaction of both systems. That leads to the stationary Van–Roosbroeck system with self-consistent optical modes on the device domain. The lasing region usually is a nanostructure, one or more quantum–wells or –wires, and quantum effects are an important feature of laser diodes. We are concerned with mathematical and numerical methods for the solution of Schrödinger–Poisson systems with a self-consistent effective Kohn–Sham potential, which model the electronic properties of a nanostructure. The inclusion of Schrödinger–Poisson systems into the Two dimensional Semi–Conductor Analysis package ToSCA of the WIAS provides a tool for the development of nanoelectronic devices.