

Some mathematical results in quantum relativistic models

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Abstract

In this talk I will present some linear and nonlinear models arising in the description of electrodynamics. The relativistic effects being important for high velocities, these models are specially interesting in the case of heavy atoms.

The mathematical analysis of the corresponding systems is based on quite novel variational arguments, from which efficient numerical algorithms can be derived.

During the presentation will also be described the link between the relativistic and the (more usual) non relativistic theory.