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Computational Complexity in Quantum Mechanics

Abstract: In this talk I will give a brief introduction to the Solvability Complexity Index hierarchy introduced by Hansen (2011). This theory provides a framework that classifies computational problems by the number of successive limits needed to solve them, starting from a computer algorithm. In the special case of spectral theory for Schrödinger operators, I will present some recent results concerning the existence of „one size fits all“ algorithms that compute the spectrum of a Schrödinger operator independently of the particular potential.

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