

The Coming Decades of Quantum Simulation

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In my lectures "The Coming Decades of Quantum Simulation" I will review the current status of the area. I will start discussing various challenges, things to be computed and simulated, and various experimental platforms. Relation to machine learning will also be reported. I will then focus on quantum simulations with ultracold atoms and ions, and discuss various verification, validation and certification of quantum simulators.

REFERENCES

- [1] M. Lewenstein, A. Sanpera, and V. Ahufinger, *Ultracold Atoms in Optical Lattices: Simulating Quantum Many-Body Systems*, (Oxford University Press, Oxford, 2017).

FIGURES

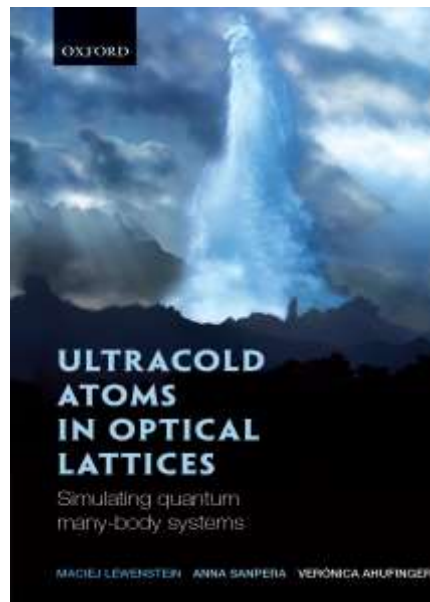


Figure 1: The cover of the book "Ultracold Atoms in Optical Lattices" (Oxford University Press, 2017)