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【56】Applying Quantum Computing to Quantum Chemistry

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Quantum computation promises exciting applications in the field of cryptography, self-learning methods and quantum simulations. Noisy small-scale quantum computers can already be used via cloud services provided by companies like IBM or Rigetti computing; and the technology is improving rapidly. HQS Quantum Simulations is a Karlsruhe-based start-up developing software for chemistry/material simulations that uses quantum computers. We aim to enable relevant utilization of (noisy) quantum computers as early as possible within the next few years, by combining high-end classical simulation methods with optimized quantum algorithms. In the presentation I briefly introduce HQS Quantum Simulations and the daily work there. I show how quantum computing can be applied to chemistry/material simulations, and discuss the possibilities and current state of quantum computing.

Author: REINER, Jan (HQS Quantum Simulations)

Presenter: REINER, Jan (HQS Quantum Simulations)

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