THE COMPLEXITY OF UNDERSTANDING QUANTUM SYSTEMS

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Abstract. The application of Quantum Information concepts to the theory of quantum many-body systems has led us to a better understanding of these systems, both by giving us new tools for their description and by showing us the ultimate limit to their simulation. In this talk, we will focus on the second point and review some results on the computational complexity of simulating quantum many-body systems, thereby connecting Quantum Information, Condensed Matter and Complexity Theory.