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Quantum optimal control for quantum technologies

Tuesday, 17 September 2024 11:00 (2 hours)

Quantum optimal control has emerged as a key tool in the advancement of quantum technologies, enabling the precise manipulation of quantum systems for a variety of applications, including quantum computation, sensing, and communication. In this talk, I will provide an overview of the fundamental principles of quantum optimal control and its role in enhancing the performance and robustness of quantum devices. By optimizing control pulses, we can mitigate the effects of noise, decoherence, and other operational imperfections, thus pushing the boundaries of what is achievable with current quantum systems. I will also discuss recent advancements in algorithmic methods for control optimization, as well as their implementation in current quantum platforms. The goal of this talk is to highlight the practical relevance of quantum optimal control in the ongoing development of scalable and reliable quantum technologies.

Presenter: CALARCO, Tommaso (Universit'a di Bologna, Italy)