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QuEra's path to fault-tolerant quantum computing

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Biography

I specialize in Rydberg atoms, Rydberg polaritons, and neutral atom arrays. I earned my Ph.D. in experimental atomic physics at the Center for Ultracold Atoms at MIT, where I conducted research on Rydberg polaritons. Currently serving as the Head of Quantum Systems at QuEra Computing Inc, I lead efforts to design, develop, and assemble neutral atom quantum computers.

Abstract

QuEra, a Boston-based leader in neutral atom quantum computing, is dedicated to developing a complete quantum computing stack, including hardware, software, cloud access, and algorithms. Our mission is to drive innovation by building scalable, practical, and fault-tolerant quantum computers. Through a rapid commercialization process, we bring groundbreaking advances from our MIT and Harvard collaborations to market. Since November 2022, our first-generation quantum computer, Aquila, has been accessible on the AWS cloud, supporting a diverse range of users. A notable milestone was our collaboration with Harvard, where we demonstrated complex algorithms with 48 logical qubits, recognized globally as a significant experimental advancement in quantum computing for 2023. In this talk, we will explore our current approach to Quantum Error Correction and our progress towards achieving fault-tolerant quantum computing.