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【824】 Towards long-distance quantum networks using trapped ions in optical cavities

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I have a small research group in Innsbruck that focuses on developing methods to entangle quantum systems in remote locations. Our quantum systems of choice are strings of trapped atomic ions. The strings are confined in linear Paul traps with an integrated optical cavity for the collection of 854 nm photons. In this talk I'll briefly introduce our main experimental methods and then give an overview of two recent papers. In the first paper we entangled two ions in buildings a few hundred meters apart. The second paper demonstrates a telecom-wavelength quantum repeater node. Finally, I'll briefly describe some other projects that we have going on.

Theoretical Work

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