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Sommario/riassunto	Systems of trapped ions and systems of ultracold Rydberg atoms are used at the forefront of quantum physics research and they make strong contenders as platforms for quantum technologies. Trapped Rydberg ions are a new hybrid technology envisaged to have both the exquisite control of trapped ion systems and the strong interactions of Rydberg atoms. In this work a single trapped Rydberg ion is experimentally investigated. A trapped strontium ion is excited to Rydberg states using two ultraviolet lasers. Effects of the strong trapping electric fields on the highly-sensitive Rydberg ion are studied. After mitigating unwanted trap effects, the ion is coherently excited to Rydberg states and a quantum gate is demonstrated. This thesis lays much of the experimental groundwork for research using this novel

system.
