

Rydberg Physics Meets Ultracold Quantum Gases

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During the last two decades, ultracold quantum gases have become a valuable experimental platform for many-body physics, and a series of groundbreaking studies with bosonic and fermionic quantum gases has been carried out. At the same time, cooling and trapping of ultracold atoms has revolutionized the field of Rydberg physics, a discipline, which has its origin in atomic physics. Today, both research directions are closely linked to each other.

In my talk, I will show how the two formerly disjunct areas of physics can benefit from each other. In particular, I will show that so-called Rydberg molecules can be employed to tune the interaction in an ultracold quantum gas via an optical Feshbach resonance.

