

News from the Amsterdam strontium quantum gas group

mardi 23 février 2016 10:20 (30 minutes)

I'll report on two research lines centered around ultracold strontium.

The first research line has the goal to produce a quantum gas of RbSr ground-state molecules. We have created a ^{84}Sr - ^{87}Rb Mott insulator and investigated STIRAP molecule association on the $^1\text{S}_0$ - $^3\text{P}_1$ intercombination line. We found only very weak transitions between free atoms and optically excited molecules, hindering us to coherently create molecules. Using mass-scaling, our spectroscopy data points to a much more promising STIRAP molecule association path in ^{87}Sr - ^{87}Rb mixtures. Furthermore, we have developed a STIRAP light-shift compensation method that has allowed us to coherently create Sr_2 molecules with more than 80 % efficiency, up from 30 % reached previously.

The second research line has the goal to create a perpetual atom laser. I'll describe our approach and show first ultracold atom signals from a new machine dedicated to this research line.

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Classification de Session: Session 3