

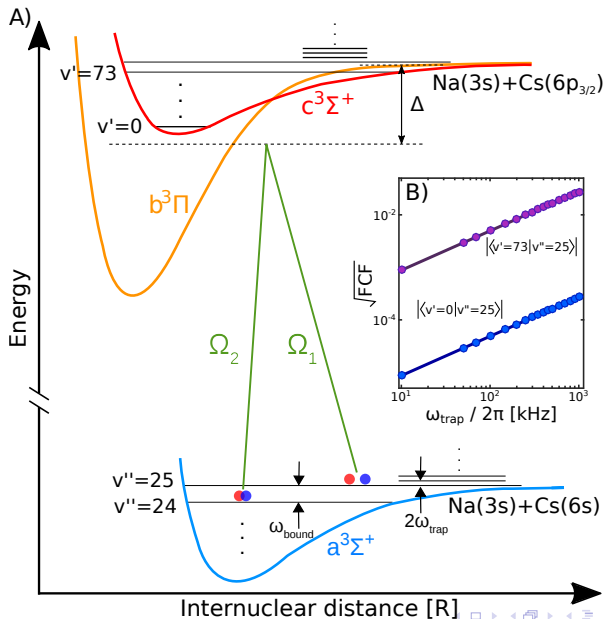
NaCs^{*} update

Yichao Yu

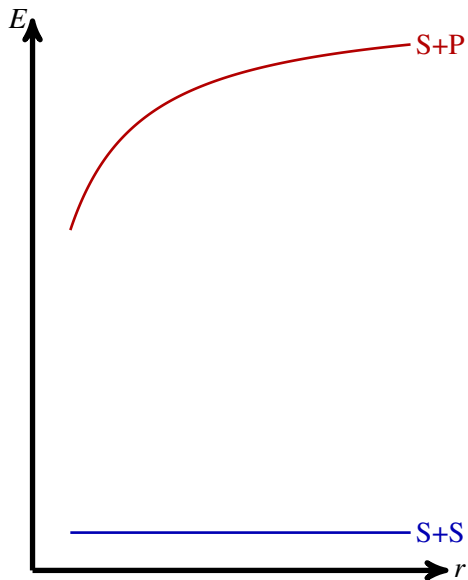
Ni Group/Harvard

Sep. 22, 2017

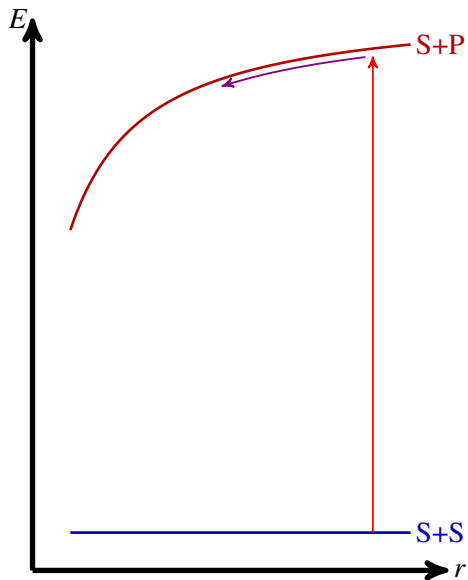
Making molecules



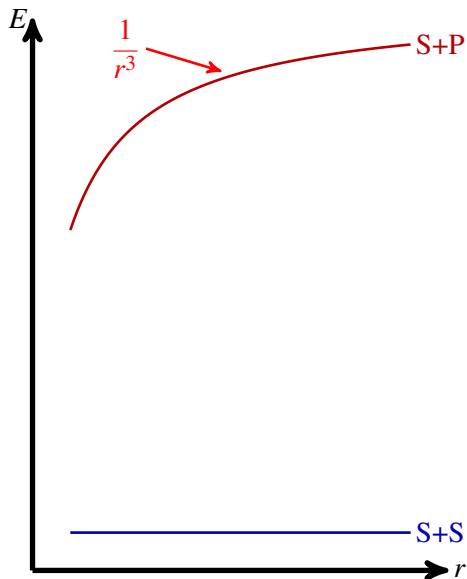
Light-assisted collisions



Light-assisted collisions



Light-assisted collisions



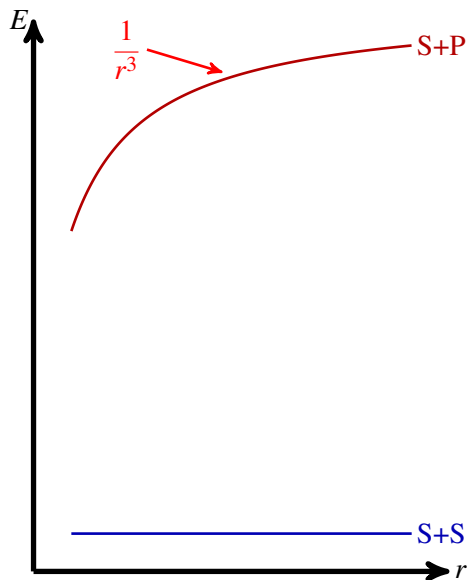
$$V_{Cs+Na} \propto \frac{1}{r^6}$$

$$d_{Cs,S \rightarrow P} \approx 11.4D$$

$$V_{Cs+Cs}(100\text{nm}) \approx 4\text{MHz}$$

$$V_{Cs+Na}(5\text{nm}) \approx 4\text{MHz}$$

Light-assisted collisions



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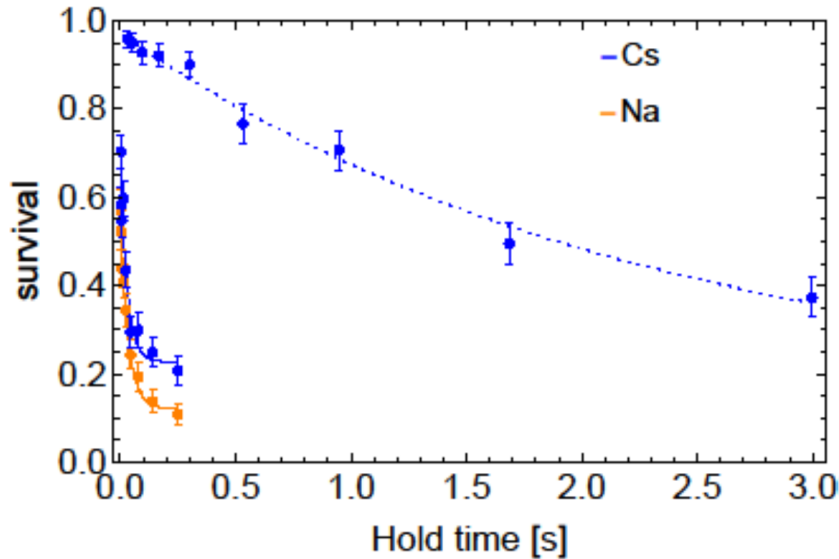
$$V_{Cs+Cs}(100\text{nm}) \approx 4\text{MHz}$$

$$V_{Cs+Na}(5\text{nm}) \approx 4\text{MHz}$$

Conclusion

Photo association between Na and Cs requires much higher intensity.

Two body loss



Two body loss

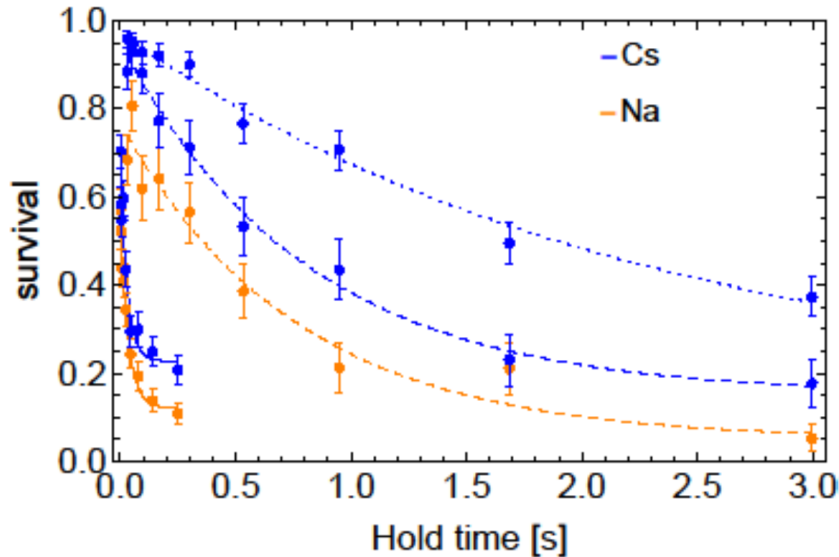


Photo association

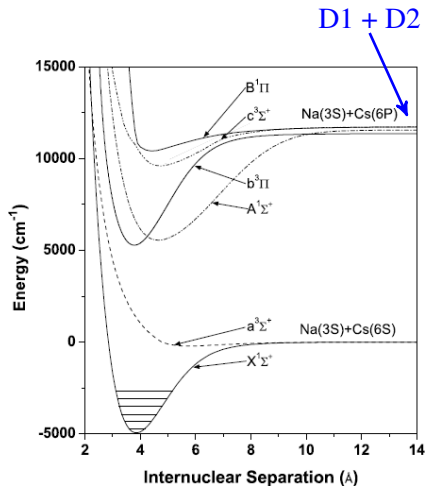
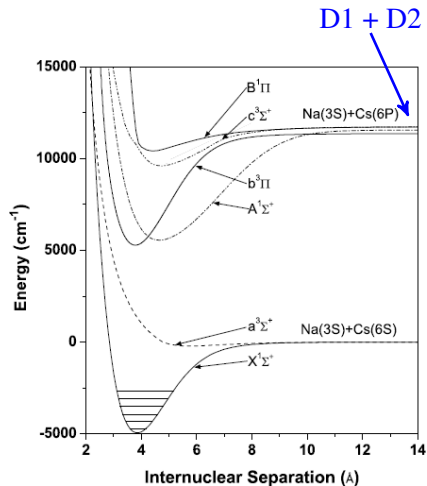
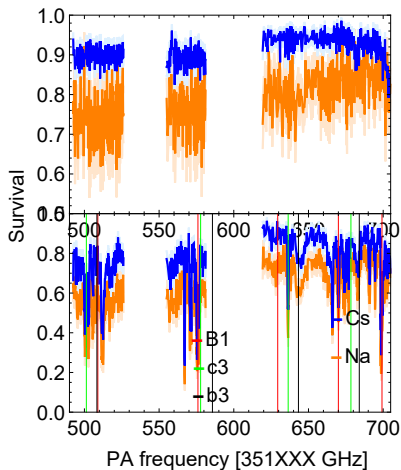


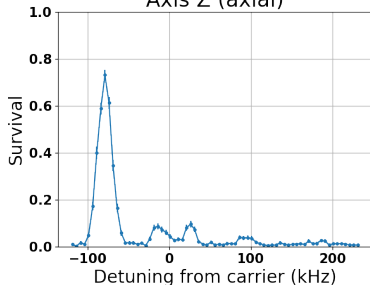
Photo association



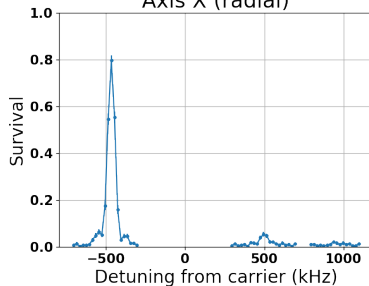
Current/next step

- Get atoms cold again
- Prepare hyperfine state
- Find molecular ground state

Axis Z (axial)



Axis X (radial)



Axis Y (radial)

