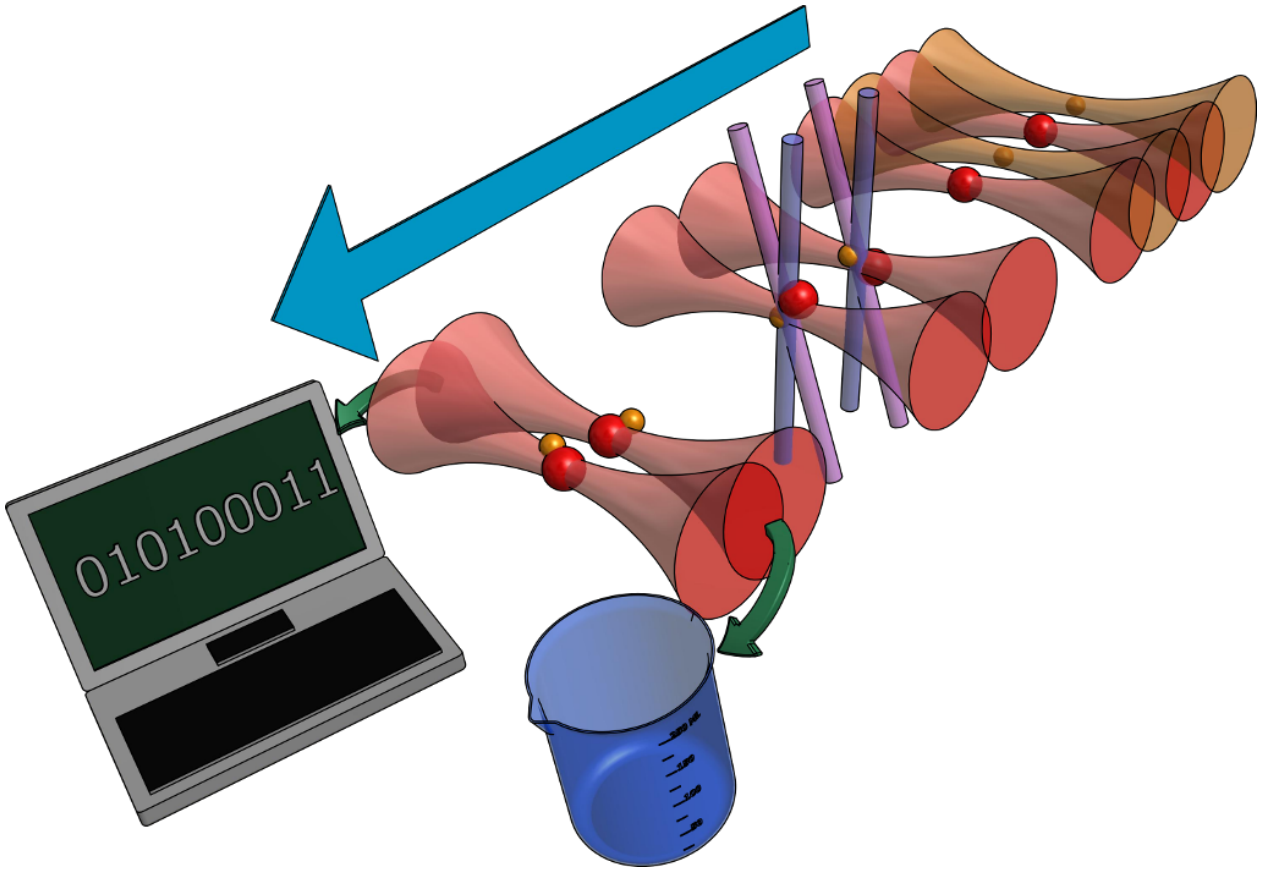
Trapping and imaging of single atom in the present of light shift



Yichao Yu
May 17, 2016
Ni Group/Harvard

Single atom loading

- Similar to
  Ref1
  Ref2
- MOT Loading
- Trapping
- Imaging
- Works for Cs

Procedure

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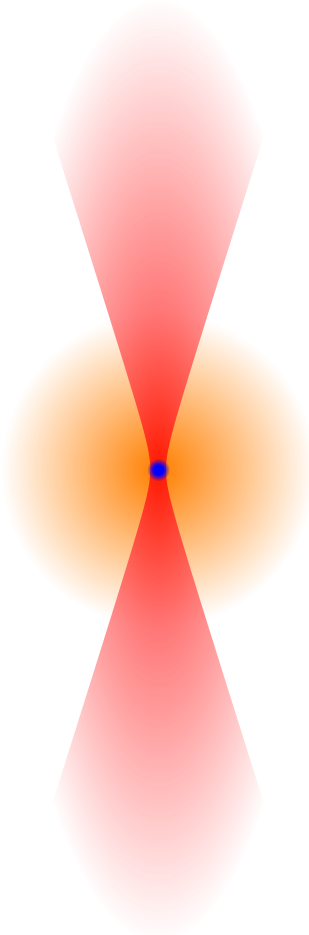

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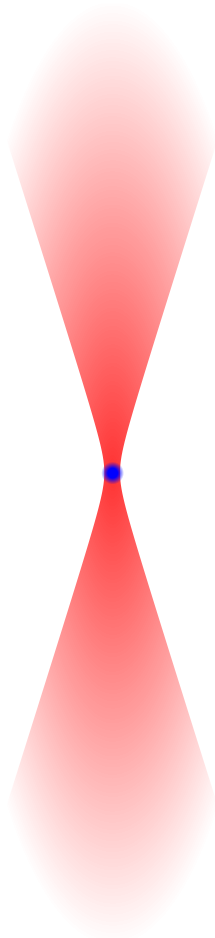

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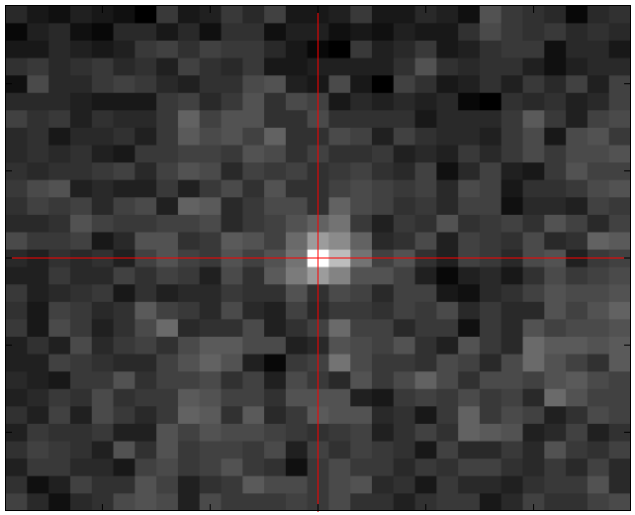
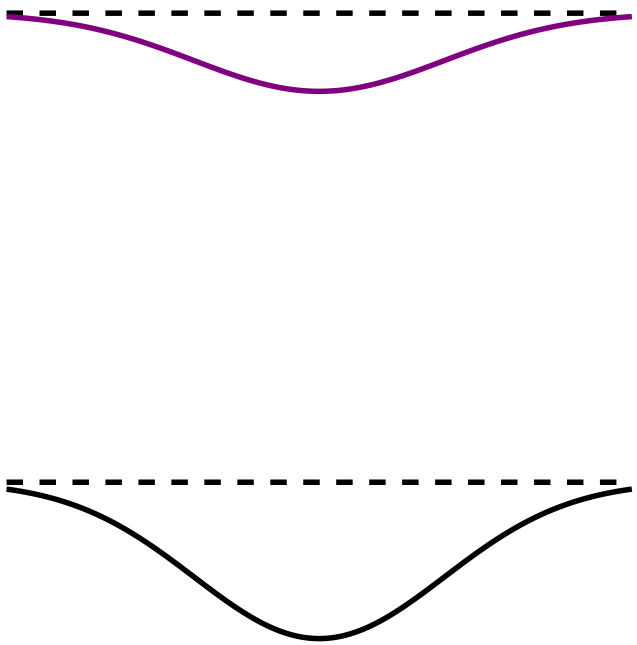


Add Histogram

Light shift

- $\beta = \dfrac{\alpha_e}{\alpha_g}$
- Inefficient cooling
- Reduced trap depth (for $\beta < 1$)
- Out of resonance



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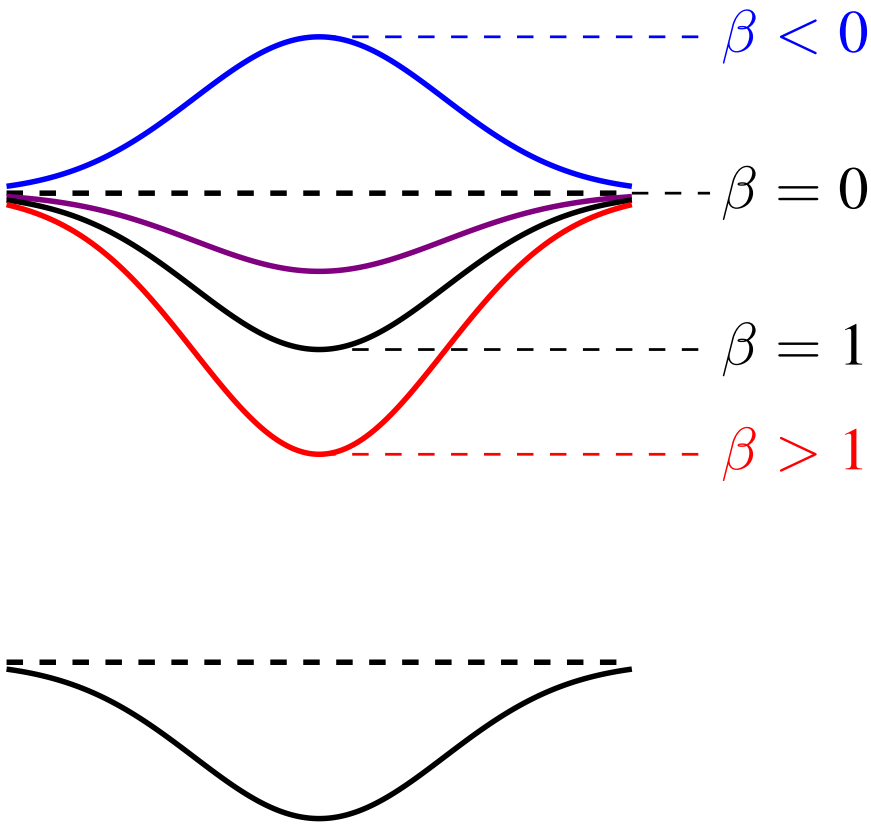

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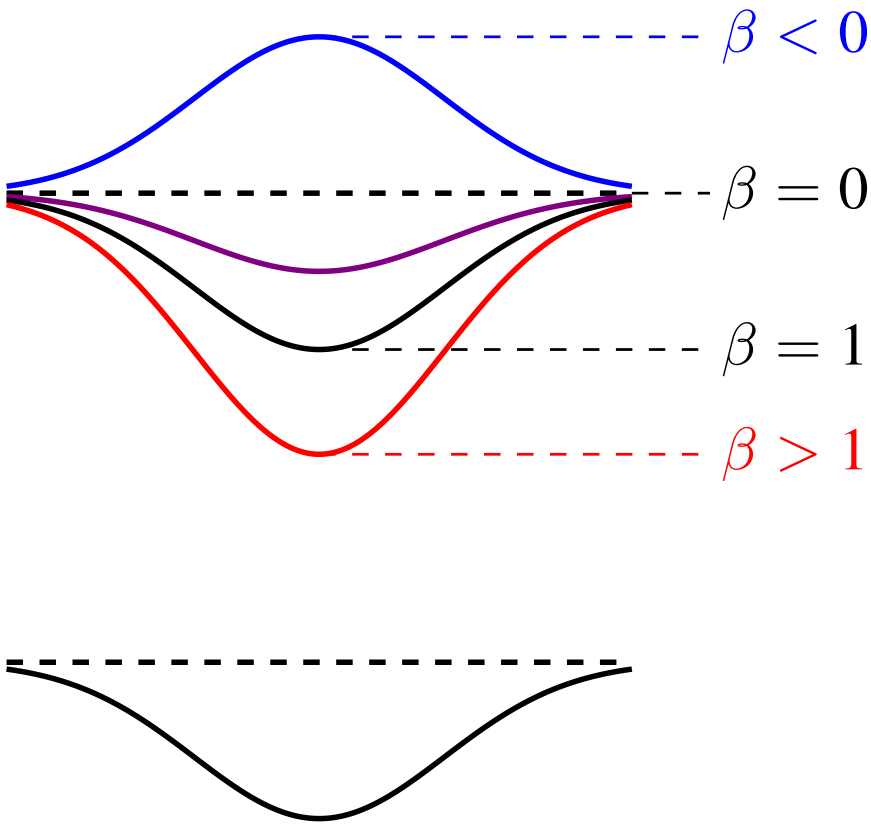

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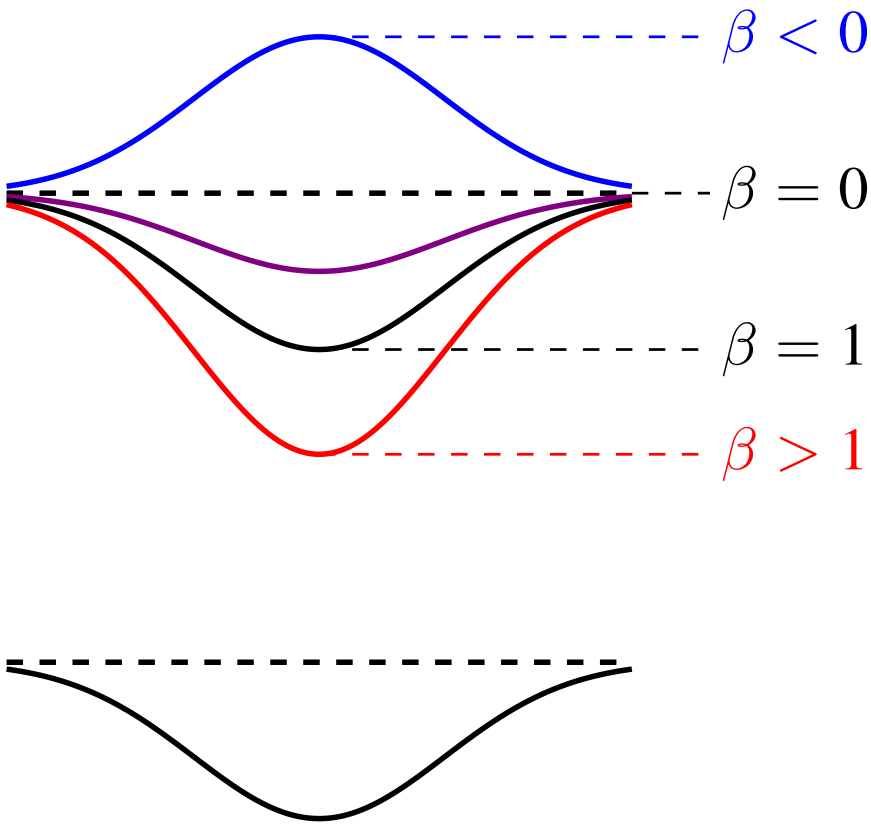

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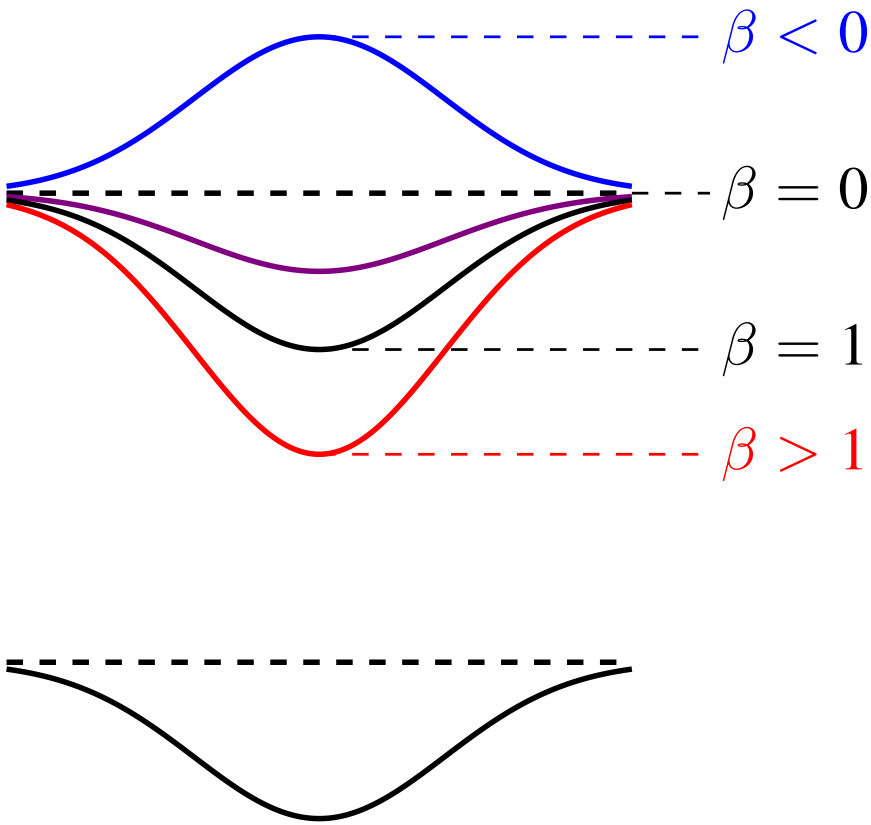

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Add photon-vs-detuning