Magnetic Field Oscillation in Adiabatic Slower System for Cold Atom Physics

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University of Texas at Austin

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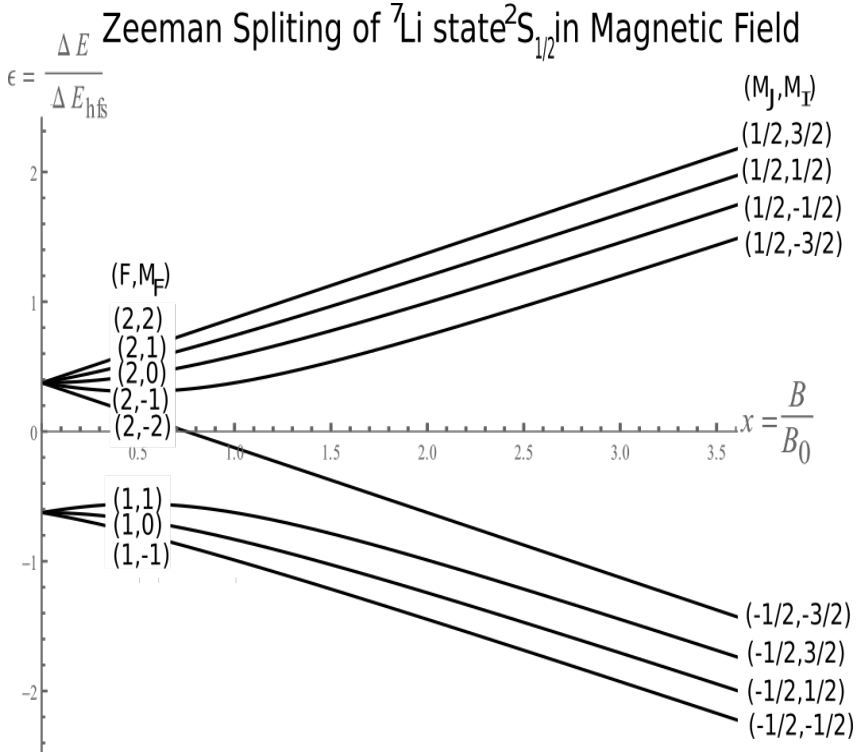
Adiabatic slower and Field Oscillation



http://demonstrations.wolfram.com/BreitRabiDiagram/

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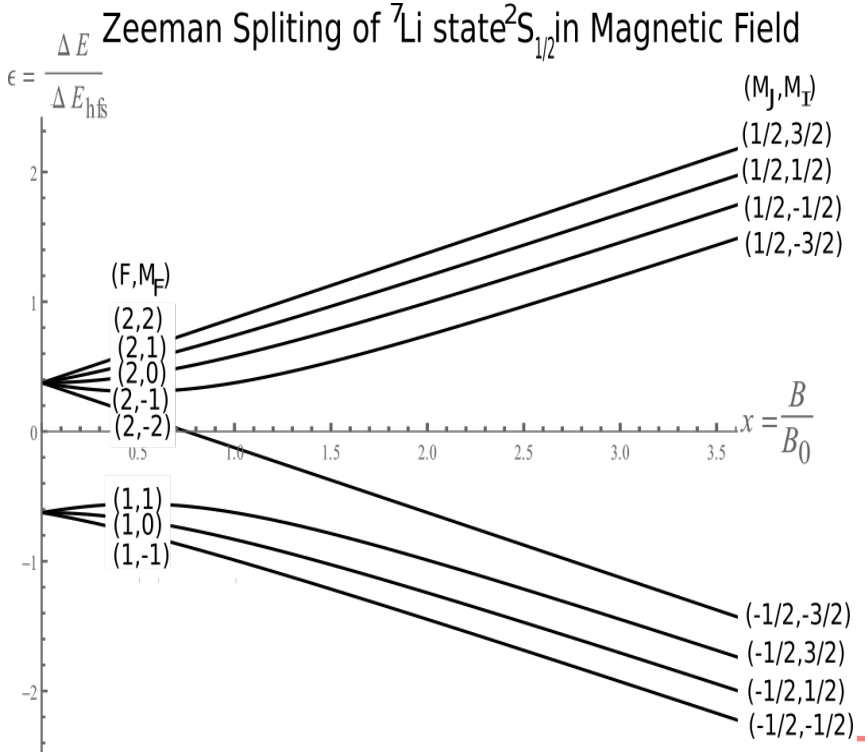
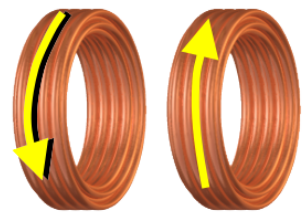
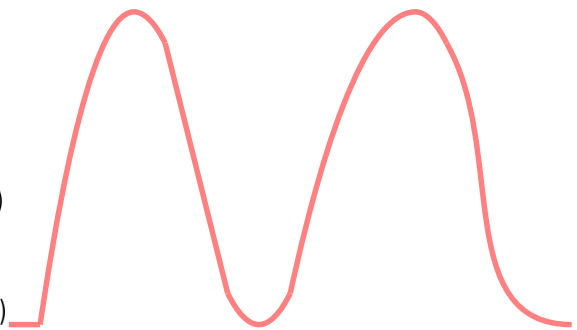


Anti-Helmholtz Coil





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E. Narevicius and M. G. Raizen. Chem. Rev. 112, 4879 (2012)

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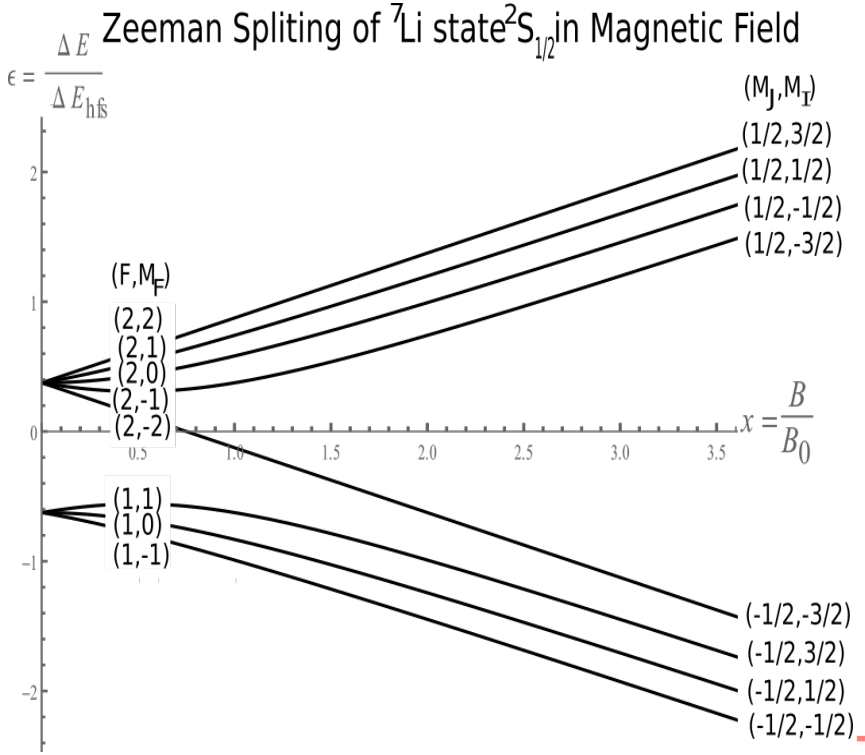

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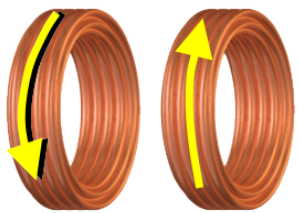

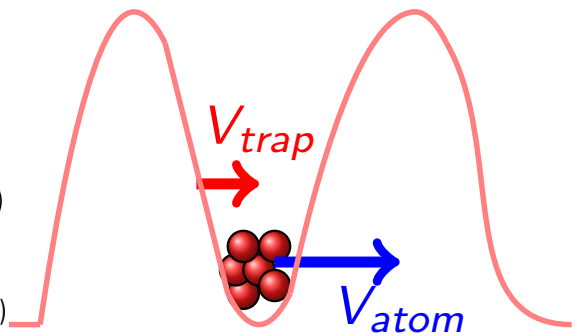

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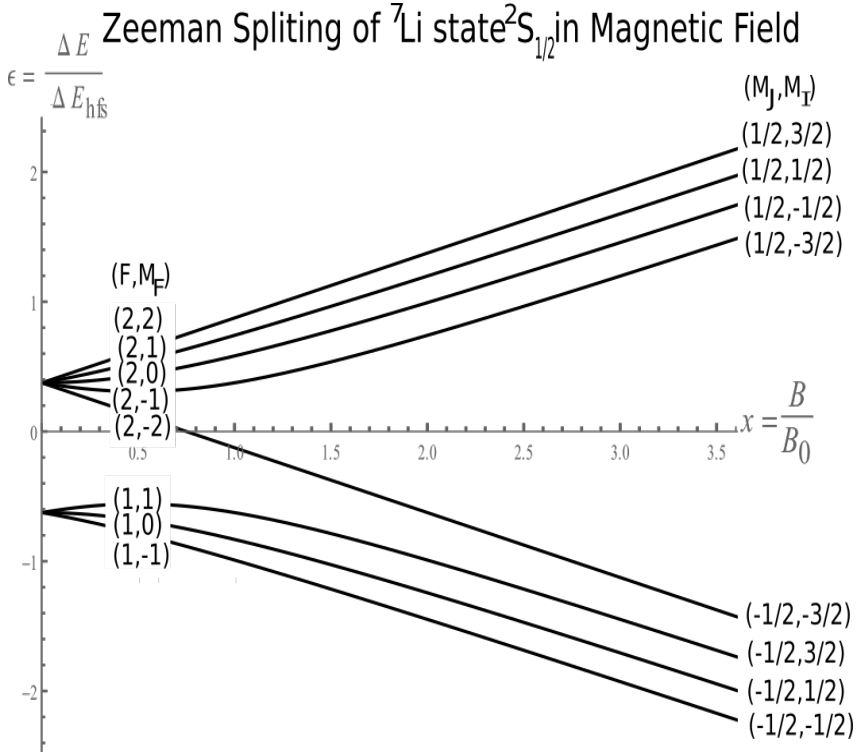

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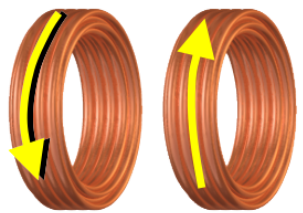

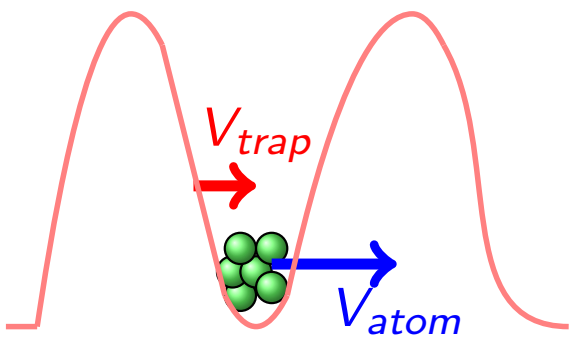

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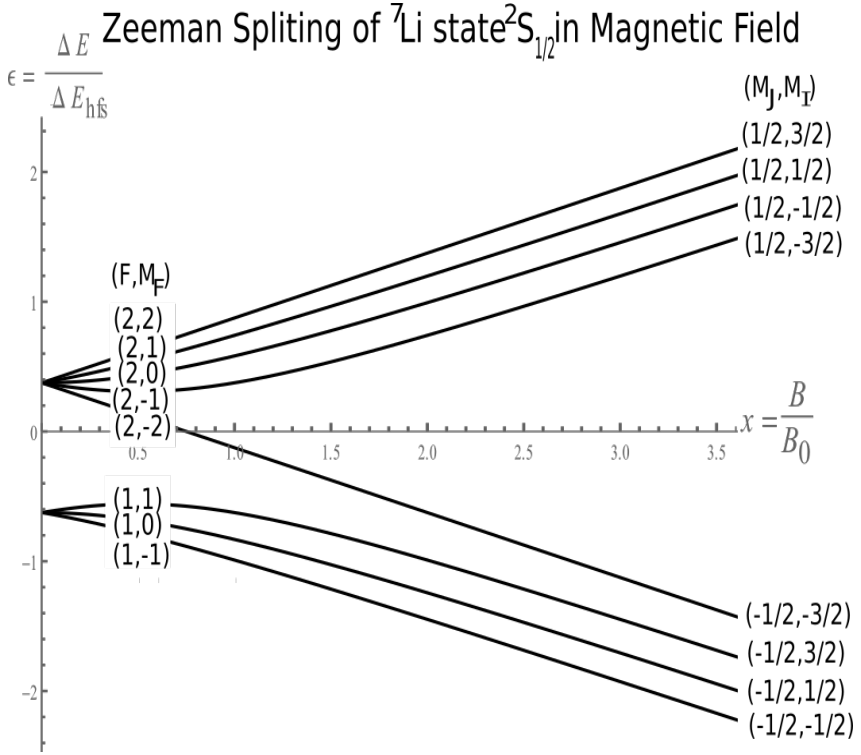

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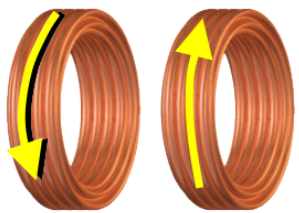

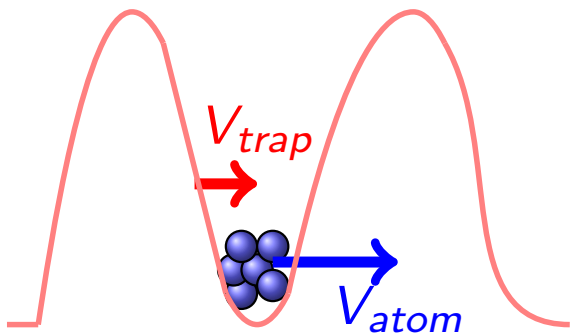

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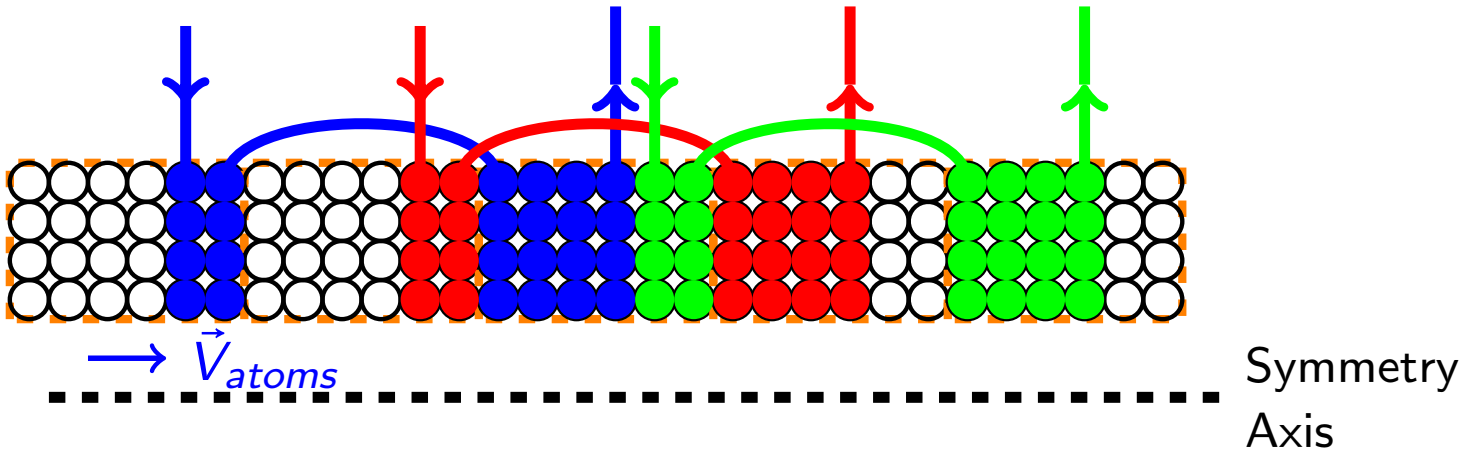
Field switching



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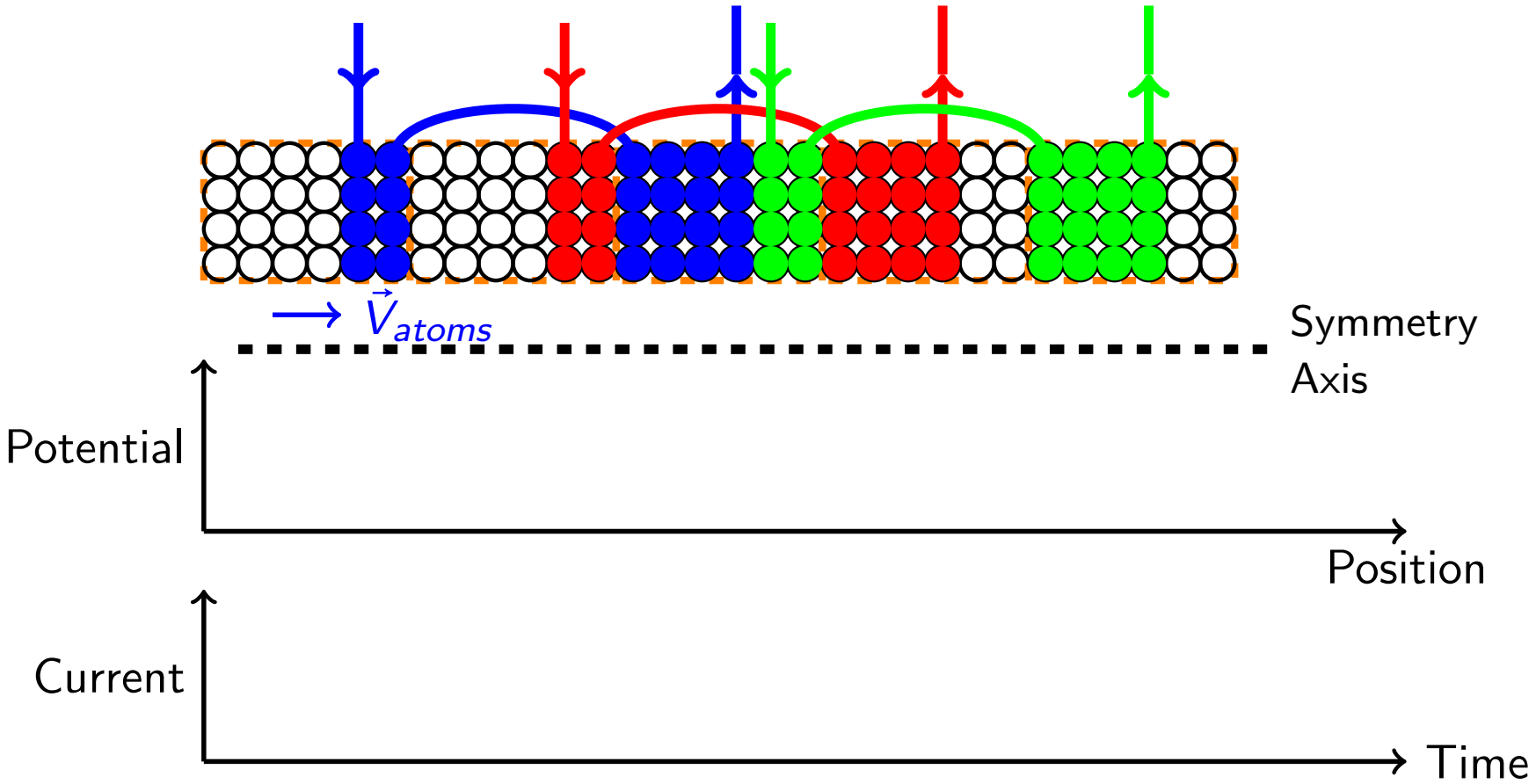

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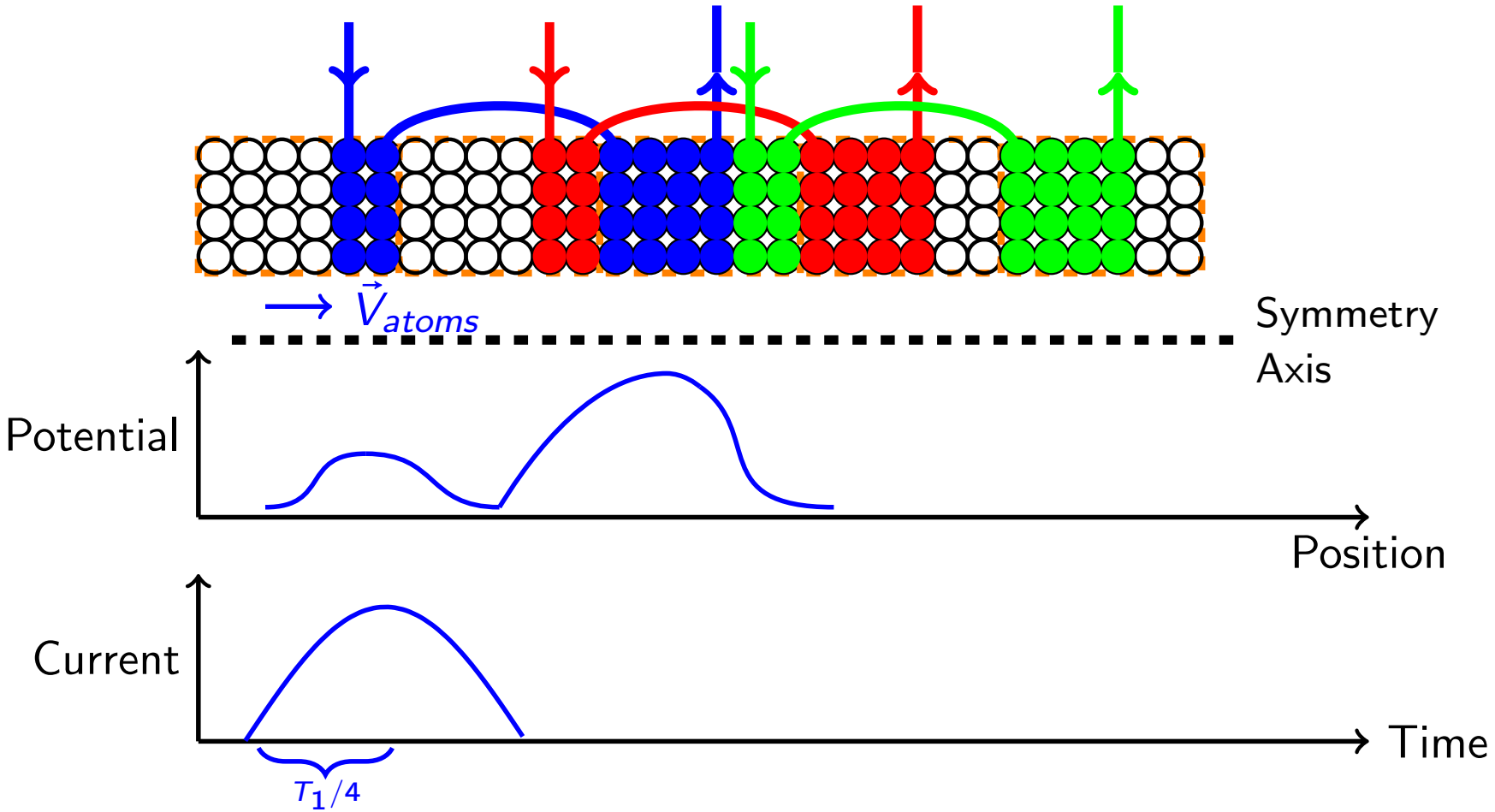

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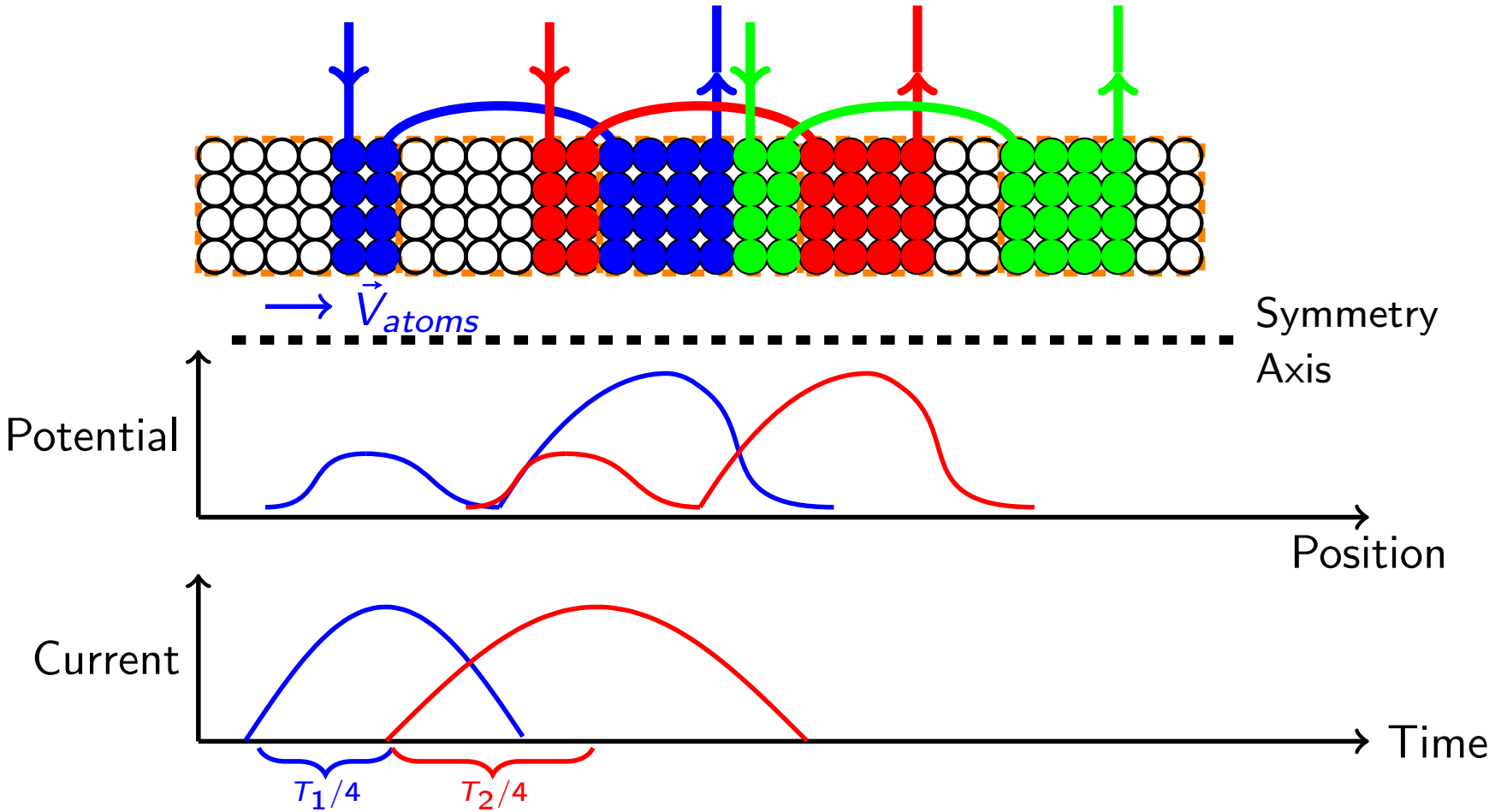

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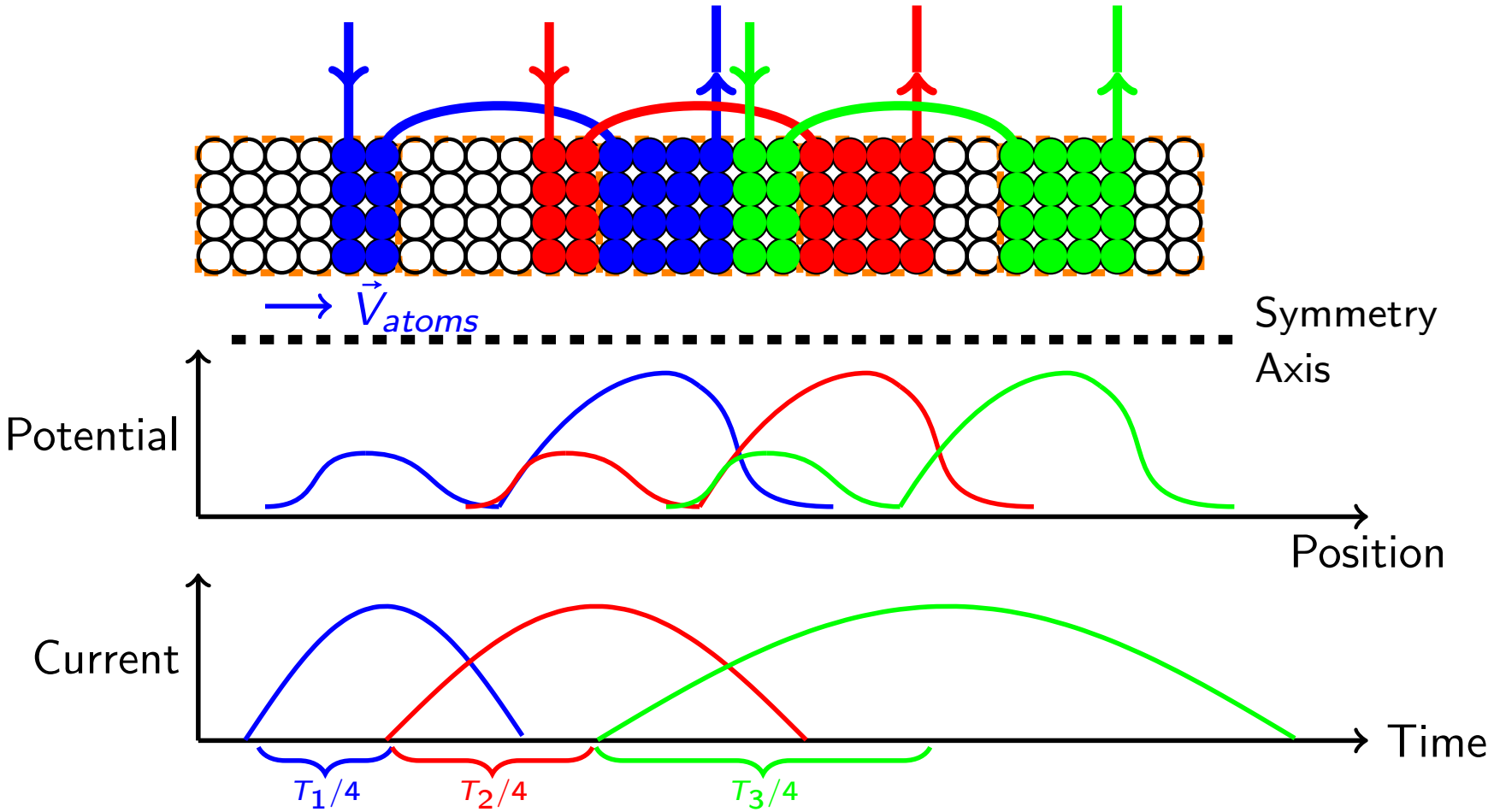


Objective

Study the oscillation of magnetics field minimium during the transition

Method

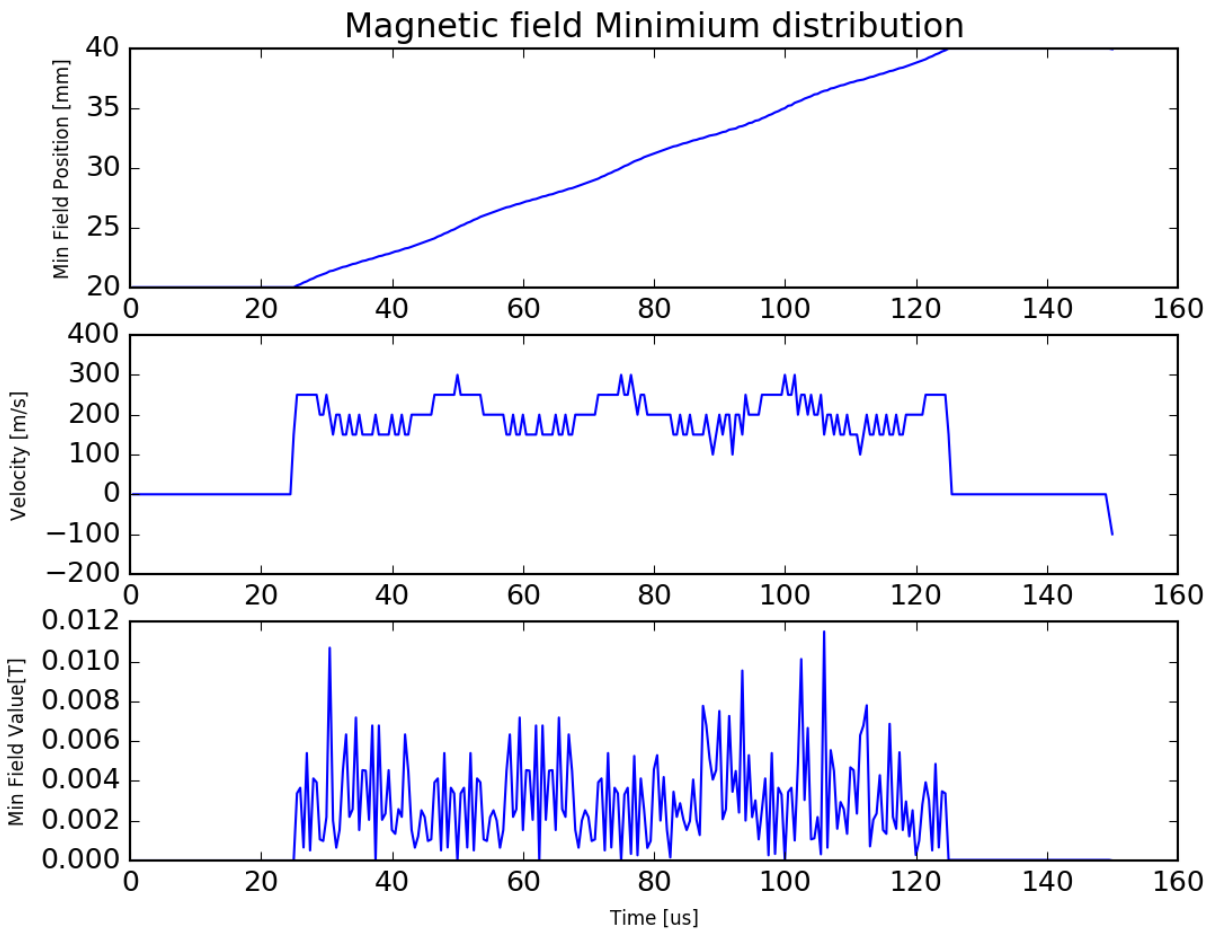
Programming languages: C++, Python, Shell

- Construct coil geometry and loacation
- Generate time dependent current in coils
- Loop Through time for certain periods.
- At each time point, loop through traps and position, calculate field distribution.
- Search for field minimium point and return position and value
- Save data file into csv file
- Call Python3 through Makefile to generate and save plots.
- Call Shell through Makefile to combine plots into gif.

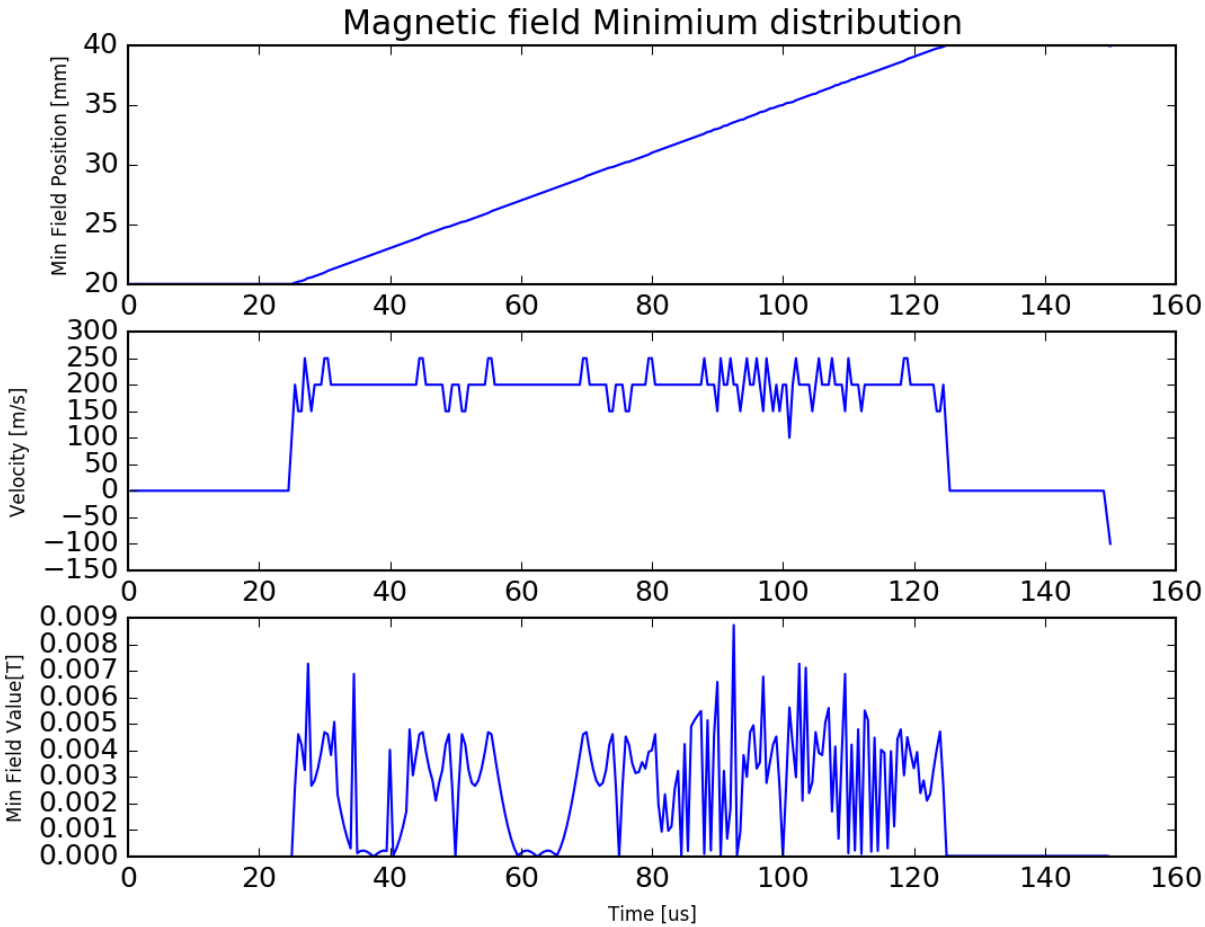
Codes: 3 head files, 13 .cc file, 2 python fiels, 1 shell script, 1 Makefile

Result and discussion

Current shape - sine



Current shape - triangle



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