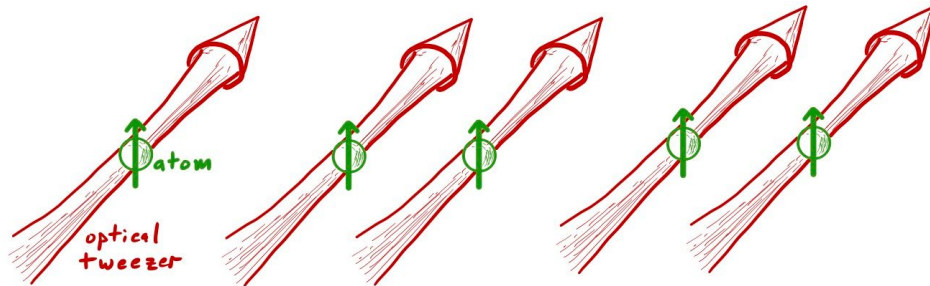


Atomic Lego Blocks

We are developing a new experiment that can hold individual atoms in potential wells created by lasers, move them around arbitrarily, and create entangled states of these atoms. Such a collection of atoms would be a useful quantum simulator of more complicated condensed-matter systems, or could be used to unravel interesting aspects of quantum mechanics and fundamental physics.



Where do you fit in?

In this summer project, you will be tasked with building the set of laser beams that will trap the atoms. This “tweezer array” is depicted in the sketch above as a set of red laser beams. The NSERC USRA project involves learning (or brushing up on) some basic optics, and using radio-frequency electronics to control the positions of a large number of laser beams. If you like optics, have a good background in programming, and want to be involved in constructing a new atomic physics experiment, this is the project for you!

Learn more:

A short review on recent progress in this kind of experiment is [here](#). But to ask questions and learn more, you are welcome to contact any of the three professors starting this project:

Aephraim Steinberg (steinberg@physics.utoronto.ca) [[Steinberg group page](#)]

Joseph Thywissen (jht@physics.utoronto.ca) [[Thywissen group page](#)]

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