



Portable Low-Cost Polarimeter and Beam Profiler

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Prominent Features

- Low cost
- Flexible computer languages
- No moving parts
- Mobile

Approach and Motivation

Knowing the polarization of a light beam is essential for BEC optical mechanics and fiber coupling.

To entrap the atoms in a MOT six beams of equal strength and polarization are required. With polarity maintaining fibers knowing the polarization for each beam prior to coupling is ideal, but with 11 beams (3 high pressure, 6 low pressure, 1 imaging, 1 cooling) having an unwieldy polarimeter is not an option.

Acknowledgments

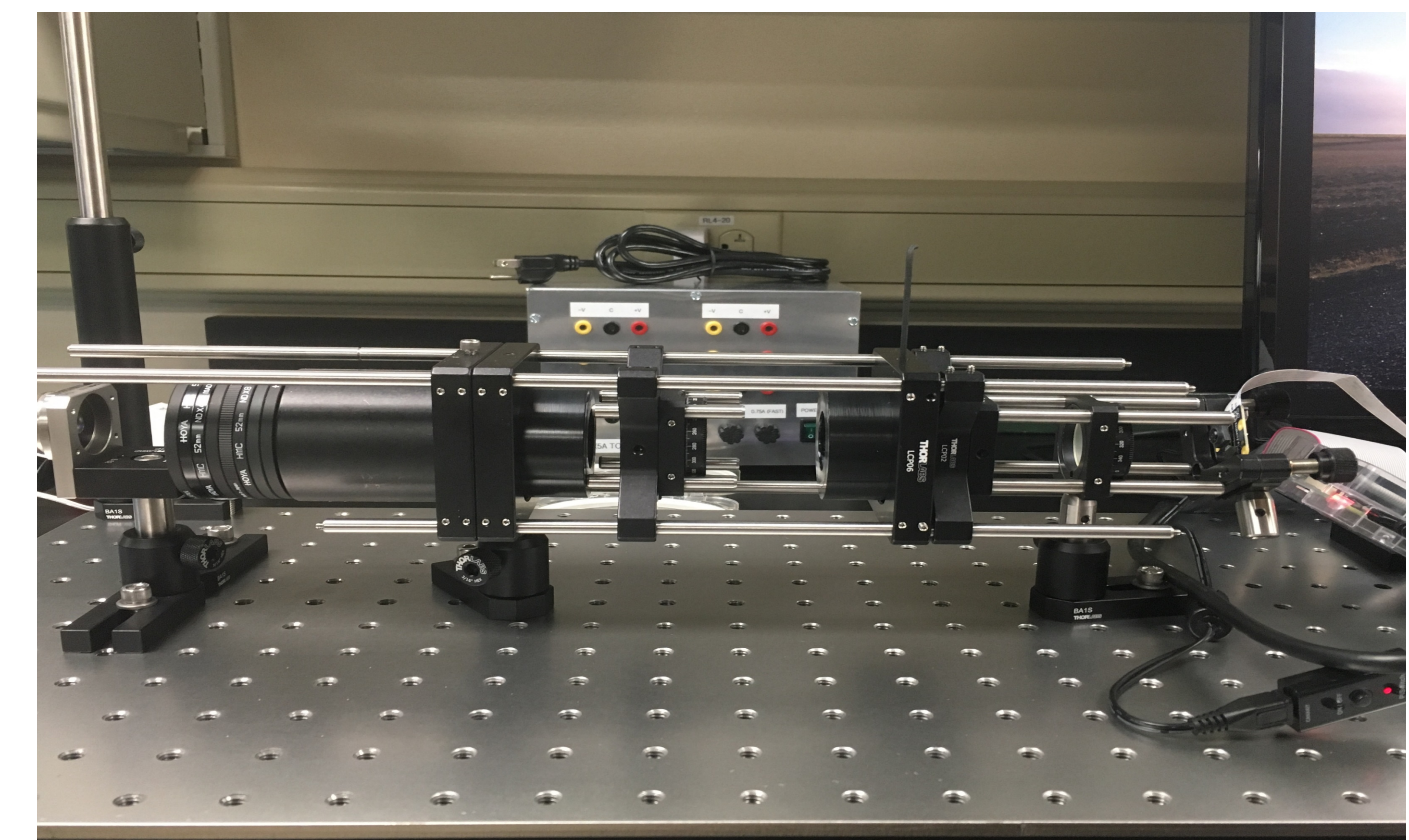
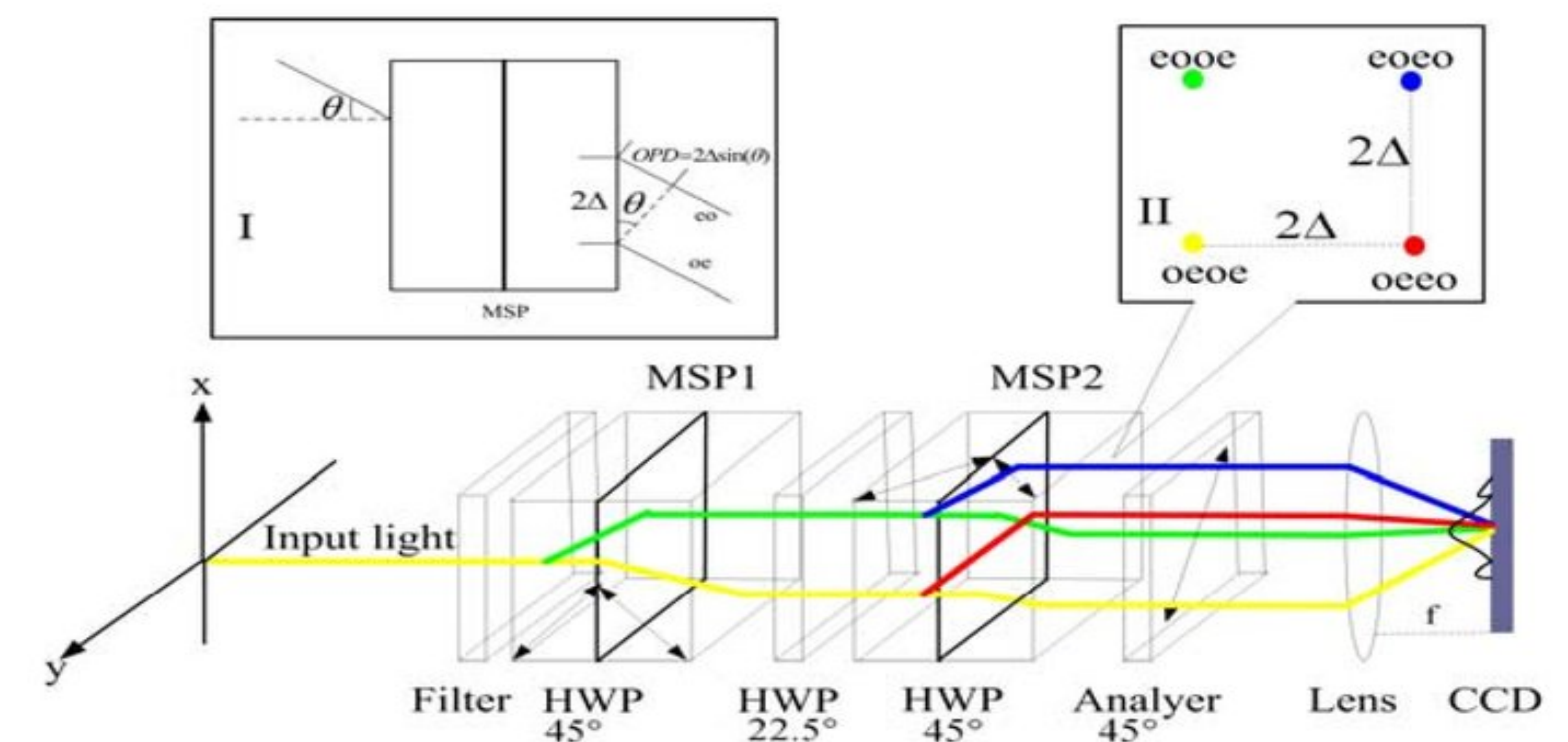
Arfken Summer Scholarship: which permitted me to conduct research outside of the school year.

Why the Pi?

The highlight of this project is the low cost price without compromising efficiency. The Raspberry Pi has enough strength to give real time analysis of the beam, and is a single unit thus eliminating the complication of moving parts.

Imaging

- Below is a real time snapshot of the incident being split into two separate beams.
- Only one halfway plate in place.



Future Works

- Add adjustable coupler slide
- Write a subsequence to permit an uncoupled beam to be profiled
- Create an app for a tablet to access and communicate with the Raspberry Pi