

Phys 4910 Spectroscopy

Doppler free spectroscopy

Introduction

In the last section of class we looked at the causes of line broadening, including the Doppler Effect. In Doppler free spectroscopy two counter propagating beams avoid the Doppler Effect by effectively interacting with only those atoms whose velocities are directed perpendicular to the laser beams.

Doppler free spectroscopy requires more sophisticated equipment than that available in our laboratories. The project is therefore a literature search.

Some Resources

- [Doppler free saturated absorption spectroscopy](#)
- [Doppler-free saturated absorption spectroscopy: laser spectroscopy](#)
- There are many more such resources available in the library and on line.

Report

The report should be structured similar to that for the first project.

- Abstract
- Introduction, including outline of theory behind Doppler broadening
- Experimental apparatus and method
- A sample spectrum showing the difference between the Doppler broadened line and the Doppler free signal
- Sample results
- Conclusion