



Physics & Astronomy Colloquium

Fall 2011

Senior Project Presentation

"Cavity Ring-Down Spectroscopy and the Effects of Mixing Parameters on the Optical Qualities of Aerosols"

Cavity ring-down (CRD) spectroscopy is an optical measurement technique that can be utilized for high-precision measurement of low-density gases and aerosols. CRD systems measure the decay of a pulsed laser signal inside of a high-finesse optical cavity. Optical extinction of a sample introduced to this cavity can then be determined based upon how this decay changes. In this experiment, a cavity ring-down spectrometer was used to investigate the optical properties of aerosols. Particles of different structures but like molecular ratios were created. Light extinction by these particles from a 532 nm laser source was then investigated. It was shown that mixing parameters could change light scattering by as much as 30%. This shows that bulk constituents alone may not be enough when considering optical effects of atmospheric aerosols and that the individual particle composition must be taken into account.

Sage Bauers

Sacramento State Physics Major

Thursday, December 8, 2011

4:00 pm in MND 1015

Open & Free to all Students, Faculty & Public