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Measurement of aerosol optical properties by integrating cavity ring-down spectroscopy and nephelometery[1] GETACHEW TEDELA, SUJEETA SINGH, MARC FIDDLER, SOLOMON BILILIGN, North Carolina A&T State University — Accurate measurement of optical properties of aerosols is crucial for quantifying the influence of aerosols on climate. Aerosols that scatter and absorb radiation can have a cooling or warming effect depending on the magnitude of the respective scattering and absorption terms. One example is black carbon known for its strong absorption. The reported refractive indices for black carbon particles range from 1.2+0i to 2.75+1.44i. Our work attempts to measure extinction coefficient, and scattering coefficient of black carbon particles at different incident beam wavelengths using a cavity ring-down spectrometer and a Nephelometer and compare to Mie theory predictions. We report calibration results using polystyrene latex spheres and preliminary results on using commercial black carbon particles.

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