

**ON THE TRUNCATION ISSUE IN THE CAVITY ATTENUATED PHASE SHIFT
PMSSA MONITOR**

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ABSTRACT. The recently developed cavity attenuated phase shift particulate matter single scattering albedo monitor has been shown to be accurate and robust for real-time aerosol optical properties and black carbon mass concentration measurements. The scattering component of the measurement suffers the truncation error due to the loss of scattered light in the forward and backward directions. This study calculates the scattering loss in this instrument by solving the radiative transfer equation in the axisymmetric enclosure using the discrete-ordinate method. The present model predicted larger scattering loss than the simplified theoretical estimate in the literature. The effects of scattering coefficient, asymmetry parameter, sampling tube surface reflection coefficient were also investigated.