

ELS-XV-2015 Abstracts  
ELS-XV-2015-80  
Electromagnetic & Light Scattering XV 2015, Leipzig  
© Author(s) 2015. CC Attribution 3.0 License.

## **Measuring the Optical Extinction of Aerosol Particles With Digital Holography**

M. Berg, N. Subedi, and P. Anderson

Department of Physics & Astronomy, Mississippi State University, Mississippi State, United States (mberg81@gmail.com)

This work will present a new technique to measure an aerosol particle's extinction cross section. The concept relies on digital holography, where the interference pattern of a particle's scattered and incident light is recorded optoelectronically to yield a digital hologram. Much information about a particle's physical character can be extracted from such holograms. For example, a silhouette-like image of the particle can be obtained via a simple Fourier-transform-based operation. This talk will show how the digital hologram can also yield the value of the extinction cross section for single and multiple nonspherical particles. Given the simplicity of the measurements involved, such capability could have important applications to quantify extinction by complex-shaped aerosol particles, such as mineral dust, and could do so in situ. Future experiments to use this technique to characterize the atmospheric coarse-mode aerosol will be described.