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Scattering Patterns for Spherical and Non-spherical Particles CHRISTOPHER SORENSEN, Kansas State University — Aerosols affect our climate directly by scattering and absorbing light. These optical properties depend on the size, shape, and composition. We have recently described patterns that appear in the phase function for spherical particles, Mie scattering, when the scattered intensity is plotted versus the scattering wave vector q = 2ksin(theta/2) [1, 2]. These patterns involve three different power law regimes and a quasi- universality on the phase-shift parameter rho= 2kR(m-1), where R is the radius and m the refractive index. Similar patterns appear for non-spherical particles. These patterns give us an empirical description of scattering by particles of arbitrary shape and refractive index. In other work we have explored the consequences of symmetry or its lack on polarization and backscattering. These results can be useful for predicting the scattering of atmospheric aerosol particles. [1] C.M. Sorensen and D.F. Fischbach, Opt. Commun. 173,145 (2000). [2] M.J. Berg, C.M. Sorensen, and A. Chakrabarti, Applied Optics 44, 7487-7493 (2005). I acknowledge very useful collaborations with M. Berg and A. Chakrabarti.

Christopher Sorensen
Kansas State University

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