**Light Scattering by Spheroids**[1] YA-MING XIE, Beijing Computational Science Research Center, Beijing 100094, China, XIA JI, LSEC, Institute of Computational Mathematics, Chinese Academy of Sciences, Beijing 100190, China — Nowadays, with the development of technology, particles with size at nanoscale have been synthesized in experiments. It is noticed that anisotropy is an unavoidable problem in the production of nanospheres. Besides, nonspherical nanoparticles have also been extensively used in experiments. Comparing with spherical model, spheroidal model can give a better description for the characteristics of nonspherical particles. Thus the study of analytical solution for light scattering by spheroidal particles has practical implications. By expanding incident, scattered, and transmitted electromagnetic fields in terms of appropriate vector spheroidal wave functions, an analytic solution is obtained to the problem of light scattering by spheroids. Unknown field expansion coefficients can be determined with the combination of boundary conditions and rotational-translational addition theorems for vector spheroidal wave functions. Based on the theoretical derivation, a Fortran code has been developed to calculate the extinction cross section and field distribution, whose results agree well with those obtain by FDTD simulation.

Ya-Ming Xie
Beijing Computational Science Research Center, Beijing 100094, China

Date submitted: 06 Nov 2015

Electronic form version 1.4