FIGURE CAPTIONS

Fig. 1 Comparison of theoretical coherent differential scattering cross sections including Rayleigh and nuclear Thomson scattering amplitudes for Pb(Z = 82) and photon energy ω = 59.54 KeV.

Fig. 2 Comparison of theoretical coherent differential scattering cross sections including Rayleigh and nuclear Thomson scattering amplitudes for Pb(Z = 82) and photon energy ω = 145.0 KeV.

Fig. 3 Comparison of theoretical coherent differential scattering cross sections including Rayleigh and nuclear Thomson scattering amplitudes for Pb(Z = 82) and photon energy ω = 1.3325 MeV.

Fig. 4 Comparison of the sum of squared amplitudes for Rayleigh scattering for Zn(Z = 30) and photon energy ν = 511 KeV.

Fig. 5 Comparison of sum of squared amplitudes for Rayleigh scattering for Hg(Z = 80) and photon energy ν = 1.308 MeV.

Fig. 6 Schematic diagram of experimental arrangement for small angle scattering.

Fig. 7 Schematic diagram of experimental arrangement for large angle scattering.

Fig. 8 Schematic diagram of experimental arrangement for bound electron incoherent scattering.

Fig. 9 Comparison of theoretical calculations (form factor) of coherent differential scattering cross sections in units of nuclear Thomson cross sections with experimental data for Au(Z = 79) and photon energies w = 25.19, 35.91, 46.00, 56.37, 74.96 and 84.30 KeV.

Fig. 10 Comparison of theoretical calculations (S-matrix) of coherent differential scattering cross sections in units of nuclear Thomson cross sections with experimental data for Au(Z = 79) and photon energies w = 56.30, 74.96 and 84.30 KeV.

Fig. 11 Comparison of theoretical calculations (form factor and S-matrix) of coherent differential scattering cross sections in units of nuclear Thomson cross section with experimental data for Pb(Z = 82) and photon energies ω = 59.54 and 145.0 KeV.

Fig. 12 Same as fig. 11 but including higher shell predictions in terms of S-matrix formalism.

Fig. 13 Comparison of theoretical predictions (RHF form factor) of coherent differential scattering cross section with experimental data for Al(Z = 13, Cu(Z = 29) and photon energy w = 84.30 Kev.

Fig. 14 Same as in fig. 13 but for Ag(Z = 47), La (Z = 57), Ba(Z = 62) and Dy(Z = 66), for photon energy w = 84.30 KeV.

Fig. 15 Comparison of theoretical prediction (RHF form factor) of coherent differential spattering cross section for Al(Z = 13), Cu(Z = 29), Sn(Z = 50) and Pb(Z = 82) for photon energy w = 145 KeV.

Fig. 16 Comparison of theoretical prediction (RHF form factor) of coherent differential scattering cross section for Al(Z = 13), Cu(Z = 29), Sn(Z = 50) and Pb(Z = 82) for photon energies w = 662 KeV and 1.33 MeV.

Fig. 17 Comparison of theoretical predictions (RHF, RRHF, S-matrix) of coherent differential scattering cross sections for Pb(Z = 82) for photon energies ω = 88.54, 145, 279, 412, 662, 839, 1115, 1203, 1332 and 2754 KeV.

Fig. 18 Comparison of theoretical coherent differential scattering cross sections including Rayleigh, nuclear Thomson, nuclear resonance and Delbruck scattering amplitudes with experimental data for Pb (Z = 82) and photon energies ω = 1.1203, 1.3325, 1.70, 2.09 and 2.754 MeV.

Fig. 19 Same as in Fig. 18 but for U(Z = 92) and photon energies ω = 1.3325, 1.70, 2.09 and 2.754 MeV.