SUMMARY OF PRELIMINARY RESULTS FROM A MEAN-FIELD ANALYSIS OF ^{16}O + ^{12}C ELASTIC SCATTERING AT SEVEN ENERGIES FROM E_{16} = 124 to 608 MeV AND ITS IMPLICATIONS FOR THE AIRY STRUCTURE OF THE SCATTERING

G. R. Satchler[1]

A coherent optical model analysis of ^{16}O+^{12}C elastic scattering data taken with ^{16}O ions at energies of 124, 132, 139, 169, 230, 300, and 608 MeV has been performed in an effort to determine a mean-field interpretation of the interaction of the two ions. The Airy structure of the scattering due to the real potential, and its variation with energy, has been studied. Examples are given of how a too simplistic interpretation of observed minima in angular distributions as Airy minima can be misleading; a more subtle analysis of the effects of absorption is needed in order to identify these minima correctly. The real mean field is shown to be given quite well by a folding model, using a recently determined effective nucleon– nucleon interaction that is both energy- and density-dependent. In addition, a quadratic-Woods–Saxon potential is found that is very close in shape to the folded one. The volume-integral per interacting pair of nucleons, and its variation with energy, is investigated and related to those obtained at lower energies, as well as for other light heavy-ion systems.

---

[1]Guest assignee from University of Tennessee, Knoxville.