

PRONOUNCED AIRY STRUCTURE IN ELASTIC $^{16}\text{O} + ^{12}\text{C}$ SCATTERING AT $E_{lab} = 132 \text{ MeV}$ ¹

A. A. Ogloblin², D. T. Khoa³, Y. Kondō⁴, Yu. A. Glukhov², A. S. Dem'yanova²,
M. V. Rozhkov², G. R. Satchler⁵, S. A. Goncharov⁶

Measurement of elastic $^{16}\text{O} + ^{12}\text{C}$ scattering at $E_{lab} = 132 \text{ MeV}$ has been performed over the angular range $6^\circ < \Theta < 125^\circ$, which covers both the diffractive and refractive regions. A prominent minimum has been observed at $\Theta_{c.m.} \approx 86^\circ$, which can be identified as an Airy minimum preceding the rainbow maximum. It thus provides the first clear experimental evidence for the refractive (rainbow) scattering pattern in the $^{16}\text{O} + ^{12}\text{C}$ system. This Airy structure can be well described by discrete sets of optical potentials with a relatively weak absorption and a deep real potential. Candidates for the realistic family of $^{16}\text{O} + ^{12}\text{C}$ optical potentials at $E_{lab} = 132 \text{ MeV}$ are discussed; those include the semimicroscopic potential given by the double folding model.

¹Abstract of published paper: *Phys. Rev. C* **57**, 1797 (1998).

²RRC Kurchatov Institute, Moscow, Russia.

³Chung Yuan Christian University, Chung Li, Taiwan, Republic of China.

⁴Kyoto Women's University, Japan.

⁵Guest assignee from University of Tennessee, Knoxville.

⁶Moscow State University, Russia.