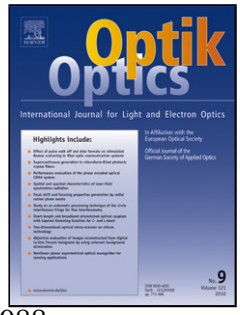

Title: Exact Form of the Physical Optics Integral

Author: Yusuf Ziya Umul

PII: S0030-4026(16)31414-0
DOI: http://dx.doi.org/doi:10.1016/j.ijleo.2016.11.088
Reference: IJLEO 58503

To appear in:

Received date: 24-9-2016
Accepted date: 13-11-2016

Please cite this article as: Yusuf Ziya Umul, Exact Form of the Physical Optics Integral, Optik - International Journal for Light and Electron Optics http://dx.doi.org/10.1016/j.ijleo.2016.11.088

Exact Form of the Physical Optics Integral

Yusuf Ziya Umul

Electronic and Communication Engineering Department, Cankaya University, Eskisehir yolu 29. km, Yukarıyurtcu Mah., Mimar Sinan Cad., No:4, Etimesgut, Ankara 06790, Turkiye

yziya@cankaya.edu.tr

Abstract: The exact structure of the physical optics integral is obtained. With this aim, the rigorous solution of the diffraction problem of waves by a perfectly conducting half-plane is considered. The Fresnel integrals of the incident and reflected scattered fields are transformed into the physical optics integrals by defining a suitable variable transform. The relation of the obtained integral with the modified theory of physical optics is discussed.

Key words: electromagnetic diffraction; optical diffraction; physical optics.