Remark on the Paper «An Exact Formula for the Phase Shifts».

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In a recent paper ⁽¹⁾ a procedure to compute scattering phase shifts in potential scattering is proposed. It is the purpose of this note to point out that this procedure does not work. For one thing, it would imply that the phase shift δ_l depends only on the values of the potential $V(r)$ for r larger than r_l , where r_l is « a sufficiently large zero » of the radial wave function $y_l(r)$; which is certainly not the case. In fact, eqs. (6) and (8) hold exactly only if the potential vanishes identically beyond r_l . But in this case eq. (8) becomes the identity $0 = 0$ (note that its left-hand side vanishes identically, as it may be verified using the recursion relations satisfied by the Bessel functions); therefore it cannot be used to compute r_l . Of course, if the potential does not vanish identically beyond r_l but is very small in that region, then both eqs. (6) and (8) remain approximately valid; however eq. (8) cannot be used to compute r_l , because the only information it relays is that indeed the potential is small beyond r_l ; and this information is certainly insufficient to determine r_l .

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I wish to thank Dr. TIETZ for a private correspondence, although I regret his unwillingness to accept my point and to publish himself an erratum, which would have made this note unnecessary.

⁽¹⁾ T. TIETZ: *Nuovo Cimento*, **50 A**, 923 (1967). The equations quoted below are from this paper.