

Broadband Coherent Perfect Absorption

Bhabani Prasad Mandal ¹

Department of Physics, Institute of Science, Banaras Hindu University, Varanasi-221005 ¹

`bhabani.mandal@gmail.com`¹

Coherent Perfect Absorption (CPA) is very important characteristic of complex potentials with the potential of technological applications. However CPA has been reported only for certain discrete incident energy so far. In this work we consider the most general non-Hermitian Hulthen potential to study the scattering of spin-less relativistic particles. The conditions for CC, SS and CPA are obtained analytically for this potential. We show that almost total absorption occurs for entire range of incidence energy for certain parametric ranges of the potential and hence term this as ‘black potential’. Time reversed of the same potential shows perfect emission for the entire range of particle energy. We also present the classical analog of this potential in terms of waveguide cross section.