Spectral singularities, unidirectional invisibility and PT-symmetry

Ali Mostafazadeh

Department of Mathematics, Koc University, Rumelifeneri Yolu, 34450 Sariyer, Istanbul, Turkey, e-mail: AMOSTAFAZADEH@ku.edu.tr

Abstract:

This talk consists of two parts. In its first part I offer a general discussion of spectral singularities of complex scattering potentials and their physical meaning. Then I discuss PT-symmetric and non-PT-symmetric self-dual spectral singularities whose optical realizations correspond to coherent perfect absorbing lasers. In the second part of the talk, I describe the PT-symmetric nature of unidirectional invisibility and survey PT-symmetric and non-PT-symmetric invisible configurations for a simple two-layer optically active system. I will conclude giving some preliminary results on the generalizations to a class of nonlinear waves.

References:
1. A. Mostafazadeh, Phys. Rev. Lett. **102**, 220402 (2009).
2. A. Mostafazadeh, Phys. Rev. A **83**, 045801 (2011), **84**, 023809 (2011), and **87**, 012103 (2013)
3. A. Mostafazadeh, J. Phys. A **45**, 44402445 (2012).