

# **$\mathcal{CPT}$ -conserved effective mass Hamiltonians through first and higher order charge operator $\mathcal{C}$ in a supersymmetric framework**

Asish Ganguly

*Department of Mathematics, Indian Institute of Technology Kharagpur,  
Kharagpur 721302, India*

`aganguly@maths.iitkgp.ernet.in`, `gangulyasish@rediffmail.com`

The features of a generalized position-dependent mass Hamiltonian  $H_m$  in a supersymmetric framework in which the constraints of pseudo-Hermiticity and  $\mathcal{CPT}$  are naturally embedded. Different representations of the charge operator are considered that lead to new mass-deformed superpotentials  $\mathcal{W}_m(x)$  which are inherently  $\mathcal{PT}$ -symmetric. The qualitative spectral behavior of  $H_m$  is studied and several interesting consequences are noted.