

PT symmetry with a system of three-level atoms

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Abstract:

We show that a vapor of multilevel atoms driven by far-off resonant laser beams, with possibility of interference of two Raman resonances, is highly efficient for creating parity-time (PT) symmetric profiles of the probe-field refractive index, whose real part is symmetric and imaginary part is anti-symmetric in space. The spatial modulation of the probe-field susceptibility is achieved by proper combination of standing-wave strong control fields and of Stark shifts induced by far-off resonance laser fields. As particular examples we explore a mixture of isotopes of Rubidium atoms and design a PT-symmetric lattice and a parabolic refractive index with a linear imaginary part.

References:

- [1] C. Hang, G. Huang, and V. V. Konotop, “PT symmetry with a system of three-level atoms”, arXiv:1212.5486.