



Polariton waves in nonlinear dielectric medium

I. V. Dzedolik, O. S. Karakchieva

(Submitted on 7 May 2012)

The phonon-polariton spectrum in dielectric medium with the third order nonlinearity was theoretically obtained. Dependence of number of polariton spectrum branches on intensity of electromagnetic field was investigated. The appearance of new branches located in the polariton spectrum gap was caused by the influence of dispersion of the third order dielectric susceptibility at increment of the field intensity in the medium. The soliton and cnoidal wave solutions for the polariton excitations for these new spectrum branches were obtained. The all-optical logic gates OR and NOT are proposed as an example of the theory application.

Subjects: **Optics (physics.optics)**

Cite as: [arXiv:1205.1301](#) [physics.optics]

(or [arXiv:1205.1301v1](#) [physics.optics] for this version)

Submission history

From: Olga Karakchieva S. [[view email](#)]

[v1] Mon, 7 May 2012 07:17:29 GMT (306kb)

[Which authors of this paper are endorsers?](#)

Link back to: [arXiv](#), [form interface](#), [contact](#).

Download:

- [PDF only](#)

Current browse context:

physics.optics

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1205](#)

Change to browse by:

[physics](#)

References & Citations

- [NASA ADS](#)

Bookmark ([what is this?](#))

