

Variation of estimates of the spectrum for coupled waveguides.

O.P. Melnichuk, I.Yu.Popov
Saint-Petersburg State University of Information Technology,
Mechanics and Optics, Russia
olky@yandex.ru, popov@mail.ifmo.ru

Section number: 14 - Mathematical Physics

MSC: 35J25, 35P15, 35P25

Keywords: Waveguides, Variational approach, Spectrum.

The system of two planar waveguides with the Dirichlet boundary conditions coupled through periodic system of small windows is considered [1]. It is proved that there exists a band below the threshold for unperturbed problem and variational estimates for the gap are obtained. Two dielectric waveguides separated by a thin high-contrast layer with a small window are investigated. The existence of an eigenvalue below the threshold is proved. For the corresponding periodic system, variational evaluation of the gap is obtained.

References

- [1] O.P. Melnichuk, I.Yu. Popov. Quantum waveguides coupled through periodic system of small windows: band gap evaluation. *Techn. Phys. Lett.* 2002. v.28(8). 69-73.