



Bragg Gratings in Semiconductor Waveguides

By Stephan Pachnicke

GRIN Verlag. Paperback. Condition: New. 108 pages. Dimensions: 8.3in. x 5.8in. x 0.3in. Masters Thesis from the year 2001 in the subject Electrotechnology, grade: with distinction, City University London, 50 entries in the bibliography, language: English, abstract: Bragg gratings are important devices for both optical communications and sensing. These devices are used to design very narrow band optical filters, which can be used in wavelength division multiplexing (WDM). It is also perceived that Bragg gratings will be used to compensate the dispersion in modern fibre optic telecommunication networks. Semiconductor gratings are usually integrated into lasers to control the operating wavelength. City University Photonic Modelling Group is a world leading research group on the use of rigorous numerical techniques to design and optimise advanced photonic devices for optical communications. The research group has already achieved results on hypothetical one-dimensional (1-D) and realistic two-dimensional (2-D) structures. In this project a combination of three numerical methods has been used, all of which are rigorous, to simulate realistic three-dimensional (3-D) structures in semiconductor waveguides. The combination of these three accurate methods, the finite element method (FEM), the least squares boundary residual (LSBR) method and the transfer matrix method (TMM) turned out to be superior to...



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