Abstracts

Asymetric Excitation of Symmetric Single-Mode Y-Junctions: The Radiation Mode Effects

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The asymmetric excitation of a symmetric single-mode Y-junction is studied in this work using two techniques: the standard BPM and a modal analysis based on the radiation spectrum. We found that the power splitting between the two outputs of the junction is strongly dependent on the coherent coupling of the odd radiation modes excited at the input of the junction. A GaAs/GaAIAs single mode junction excited by a single mode fiber is experimentally tested and a splitting ratio as high as 12 dB is obtained. Such a result, which could not be explained if the radiation field is neglected, proposes new applications of the Y-junction like an optical displacement sensor with a high sensitivity in the order of 5 dB/µm.

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