Abstracts

Vectorial Wave Analysis of Uniform-Core Optical Fibers Using a Novel Boundary Integral Method

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Vectorial wave analyses of uniform-core optical fibers using a novel boundary integral method that does not use Green's function, are presented. The expansion of the electromagnetic field on the boundary, the selection of the weight function, and the method for giving boundary conditions are discussed first. By using the formulation obtained, the propagation characteristics of elliptical-core optical fibers are analyzed. The effect of the boundary shape on the numerical results is also investigated through analyses of rectangular-core fibers. It is found that the new boundary integral method can easily be applied to solve vectorial wave boundary value problems.

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