Abstracts

The Variational Principle for Non-Self-Adjoint Electromagnetic Problems

A systematic and intuitive procedure is proposed to derive the variational (or stationary) principle for non-seff-adjoint electromagnetic problems with various boundary conditions. Several physical interpretations of this principle in terms of generalized reactions, time-average stored energy, and reactive powers, respectively, are discussed in detail. This general variational principle which makes the generalized reactions a stationary value is actually an extension of the least action principle in physics. The applications of the principle to establish the variational expressions for a waveguide, a cavity resonator, and a loasy one-dimensional inhomogeneous slab are presented.

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