

## Unified Approach to the Derivation of Variational Expression for Electromagnetic Fields

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A unified procedure to derive the variational expressions for electromagnetic field problems is presented. It is shown that the variational expressions for a variety of electromagnetic parameters such as, for instance, a resonant frequency, a propagation constant, and an impedance matrix, can be formulated systematically all from "the principle of least action" point of view. It is pointed out that the Maxwell's equations themselves can also be derived from the least action principle.

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