Radiation Power of Time Harmonic Oscillating Electric and Magnetic Diploes System

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Annotation

In the applied electrodynamics, antenna, diffraction problems are often solved by numerical methods, which are based on the integral representation. Solutions are represented in the problem by electrical, magnetic or combined current distributions. Often from a solution to a problem it is needed to estimate radiation power, to assess the work of external forces, energy balance, effective cross section, and so on [1, 2]. It is linked to at least triple integration. Double integration relates to 4π spatial angle, and other to the area of current distributions. From point of view of generality and simplicity the work deals with system of a finite number electric and magnetic dipoles arbitrary distributed in space. Each dipole oscillates with arbitrary amplitude radiates time harmonic electromagnetic wave. The time factor system is $e^{-i\omega t}$. The goal is to define the total energy flow, which is the system radiates to infinity, the energy flow is considered on S surface of sphere with infinite radius.

References

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[2] Walton C. Gibson, „The Method of Moments inElectromagnetics“ 2008 by Taylor & Francis Group, LLC