Abstracts

Dimensional analysis of two-layer spherical dielectric resonator

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Dimensional analysis is used to study the complex resonance of a two-layer spherical dielectric resonator (DR). In the analysis, the various dimensionless products, or Pi terms, of the system are found. From the Pi theorem, the Pi terms are related to one another by a function, which is found using the curve-fitting technique in this paper. For demonstration, the fundamental TE mode, the TE/sub 111/ mode, of a spherical DR is investigated. Simple formulas for the resonant frequency and Q-factor are obtained. The results are compared with the exact solutions and excellent agreement is obtained.

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