Abstracts

General Treatment of Klystron Resonant Cavities

K. Fujisawa. "General Treatment of Klystron Resonant Cavities." 1958 Transactions on Microwave Theory and Techniques 6.4 (Oct. 1958 [T-MTT]): 344-358.

Klystron resonant cavities are treated for general cases and their equivalent circuits are theoretically determined, which allows a fairly accurate estimate of resonant properties. It is shown that a reentrant cavity is expressed as a low-frequency series LCR/sub se/ circuit or a shunt LCR/sub sh/ circuit, taking L as the inductance of a toroidal coil with one turn and with a cross section the same as the cavity, C as the gap capacitance plus the equivalent capacitance of the cavity, and R/sub se/ or R/sub sh/ as the equivalent series or shunt resistance of the cavity at resonance. The introduction of the equivalent cavity capacitance has proved to be very effective. The formulas derived here enable one to calculate the resonant frequency within an error of a few per cent and the shunt resistance and the Q within an error of several tenths of a per cent in most cases, and thus should prove to be very useful to the designer of microwave circuits.

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