Abstracts

Microwave Hyperthermic Distributions in a Layered Living Body with Nonlinear Thermoregulatory Properties (Short Papers)

S. Caorsi. "Microwave Hyperthermic Distributions in a Layered Living Body with Nonlinear Thermoregulatory Properties (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1406-1411.

In this paper, the microwave heating of biological systems with nonlinear thermoregulatory properties is considered. Temperature distributions are calculated in a layered biological model exposed to uniform plane waves. The external surfaces of such a model are cooled and its thermoregulatory properties are assumed to be nonlinear functions of the local temperature. The calculation of the space-time evolution of the temperature is performed using a numerical program that has been developed by applying the finite-difference method. In this numerical program, the nonlinear thermoregulatory functions are given either by a segment-linearization process or by an arbitrary analytical form or by a transformation of an input sample set. The mean power density of the incident electromagnetic wave and the coolant temperature are also taken time-dependent.

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