

Generation of Numerical Data for the Facilitation of the Personalized Hyperthermic Treatment of Cancer with An Interstitial Antenna Array Using the Method of Symmetrical Components

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Abstract : The method of moments combined with the method of symmetrical components is used for the analysis of interstitial hyperthermia applicators. The basis and testing functions are both piecewise sinusoids, qualifying our technique as a Galerkin one. The dielectric coatings are modeled by equivalent volume polarization currents, which are simply related to the conduction current distribution, avoiding in that way the introduction of additional unknowns or numerical integrations. The results of our method for a four dipole circular array, are in agreement with those already published in literature for a same hyperthermia configuration. Apart from being accurate, our approach is more general, more computationally efficient and takes into account the coupling between the antennas.

Keywords : hyperthermia, integral equations, insulated antennas, method of symmetrical components

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