

Abstract Submitted
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The Effect of Heterogeneous Conductivity on Thermal Diffusion in Tissue¹ GREGORY VARNER, RICHARD ROLLEIGH — Local application of intense heat is used in a variety of medical therapies. Examples include eye surgery and cancer treatments. In such treatments, it is valuable to be able to predict the temperature distribution in the tissue. Yet, predicting the temperature distribution in the tissue presents a unique challenge because the thermal properties, such as the conductivity, change as tissue damage occurs. This effect dynamically changes an initially homogenous material into the more complex heterogeneous case. A computational method for correcting for the spatial and temporal variations in the thermal conductivity due to damage in the tissue will be presented. The results presented will indicate the significance of the gradient of the conductivity term. This theoretical work is in collaboration with hyperthermic treatment of mammary tumors in mice.

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