# Abstracts

## On the feasibility of detecting flaws in artificial heart valves

*E.S.A.M. Lepelaars, W.D.R. Van Ooijen and A.G. Tijhuis. "On the feasibility of detecting flaws in artificial heart valves." 2000 Transactions on Microwave Theory and Techniques 48.11 (Nov. 2000, Part II [T-MTT] (Special Issue on Medical Application and Biological Effects of RF/Microwaves)): 2165-2171.*

Investigates the feasibility of detecting defects in certain artificial heart valves by determining the electromagnetic behavior of some simple models with the aid of thin-wire integral equations. The idea is to use the stationary current that occurs at late times after the excitation of a closed loop as a discriminator. This current exhibits an exponential decay when a resistive load is included that is representative of fatigue or a partial fracture. The decay rate is indicative of the severity of the defect. For a wire with an opening, which is representative of a complete fracture, the late-time current is completely absent. As a simplified model of remote detection by a small loop antenna that could be introduced via a catheter, the authors consider the coupling between two parallel circular wires. In all cases, the dispersive environment of the valve is taken to be homogeneous and filled with blood since this medium exhibits a representative dispersion.

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