

Electrical Impedance Tomography and Spectroscopy

David Isaacson
Mathematics, RPI
isaacd@rpi.edu

Abstract

Electrical impedance tomography systems apply currents to electrodes on a bodies surface and measure the resulting voltages. From these measurements reconstructions of the electrical conductivity and permittivity inside the body are made and displayed. When the measurements are made at multiple frequencies the reconstructed conductivities and permittivities regarded as functions of frequency are called the impedance spectra. We describe how we measure and reconstruct impedance spectra. We will present movies and images showing how the impedance spectra may be used to diagnose breast cancer.