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Title

Terahertz pulsed imaging in vivo: measurements and processing methods

Source

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Abstract

This paper presents a number of data processing algorithms developed to improve the accuracy of results derived from datasets acquired by a recently designed terahertz handheld probe. These techniques include a baseline subtraction algorithm and a number of algorithms to extract the sample impulse response: double Gaussian inverse filtering, frequency-wavelet domain deconvolution, and sparse deconvolution. In vivo measurements of human skin are used as examples, and a comparison is made of the terahertz impulse response from a number of different skin positions. The algorithms presented enables both the spectroscopic and time domain properties of samples measured in reflection geometry to be better determined compared to previous calculation methods. (C) 2011 Society of Photo-Optical Instrumentation Engineers (SPIE).