Abstracts

A Frequency-Hopping Approach for Microwave Imaging of Large Inhomogeneous Bodies

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A frequency-hopping approach is proposed to process multifrequency CW microwave measurement data so that larger dielectric bodies for microwave imaging can be reconstructed with higher fidelity compared to a single-frequency reconstruction. The frequency hopping approach uses only data at a few frequencies, and hence can reduce data acquisition time in a practical system. Moreover, the frequency-hopping approach overcomes the effect of nonlinearity in the optimization procedure so that an algorithm is not being trapped in local minima. In this manner, larger objects with higher contrasts could be reconstructed without a priori information. We demonstrate the reconstruction of an object 10 wavelengths in diameter with permittivity profile contrast larger that 1:2 without using a priori information.

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