

A Novel Pulse-Echo Technique For Medical Three-Dimensional Imaging

Yamani, A.; King Fahd Univ. of Pet. Miner., Dhahran;
Medical Imaging, IEEE Transactions on; Publication Date: Dec 1997; Vol: 16, Issue:

6

King Fahd University of Petroleum & Minerals

<http://www.kfupm.edu.sa>

Summary

A new pulse-echo imaging technique for close near-field applications is proposed. Based on the theory developed for the continuous-wave automatic focusing technique (CWAFT), it uses instead, a frequency-domain phase compensation through a convolutional mechanism. In addition, the scanned frequencies of the transmitted CW signals are sent simultaneously in a pulse that is used for the data acquisition and processing. The pulse-echo nature of this technique makes it a candidate for further development and evaluation for ultrasonic three-dimensional (3-D) medical imaging and nondestructive testing. Furthermore, the spike-like nature of the back propagator in the frequency domain is used to half the data acquired. This alleviates most of the drawbacks of the CWAFT in data acquisition and processing. Simulation results are presented for both two-dimensional (2-D) and 3-D targets

For pre-prints please write to: abstracts@kfupm.edu.sa