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Statistical Analysis of Shear Wave Speed Recovery Using the Direct Algorithm and the Arrival Time Algorithm.

Elastography is a non-invasive method which images the mechanical properties of tissue, such as tissue stiffness. The elastography experiment is performed by inducing a shear wave in tissue and measuring the resulting interior displacement using ultrasound. From these displacements, we can then calculate the arrival time of the shear wave. This arrival time data allows us to recover the shear wave speed, an indicator of tissue stiffness. We consider two methods to recover the shear wave speed using the arrival time of the wave, and analyze the effect of Gaussian noise in the arrival time data on the recovered shear wave speed for each algorithm. (Received September 09, 2014)