A FILTERING ANALYSIS OF A SYNTHETIC SEISMIC WAVE USING TIME-DEFORMATION METHOD

MENGYUAN XU[1], WAYNE A. WOODWARD[2] AND HENRY L GRAY[2]

[1]Statistics Genomics Unit, NIH/NIMH (National Institutes of Health/
National Institute of Mental Health), Bethesda, MD 20892, USA

[2]Department of Statistical Science, Southern Methodist University,
Dallas, TX 75205, USA

Abstract

For non-stationary time series consisting of multiple time-varying frequency (TVF) components where the frequency of components overlaps in time, classical linear filters fail to extract components. The G-filter based on time-deformation has been developed to extract components from the data with TVF. G-filter can be used to extract non-stationary components with various types of frequency behavior. In this paper, we apply G-filter to a synthetic seismic wave with complicated frequency behavior. The results show that G-filter is a powerful tool in filtering non-stationary data with multiple frequency structure.