

South Carolina Department of Transportation

Geophysics Training Short Course

Homework Assignment #3

1. What distinguishes a dispersive seismic wave from a non-dispersive seismic wave?
2. What makes passive sources of Rayleigh waves advantageous for surface wave tests compared to active sources?
3. For the SASW method, the time domain signals at each receiver recorded during the acquisition step are converted to the frequency domain via Fourier transforms. What aspect of Rayleigh wave propagation requires that calculations be performed in the frequency domain?
4. Shown below is a plot of the phase of the cross-power spectrum from an SASW test. As noted, the receiver spacing is 12.8 m. Note also that the phase is provided in radians and ranges from $+\pi$ to $-\pi$ radians. Using the eight points shown on the figure, calculate the plot Rayleigh wave dispersion curves as a function of frequency and wavelength.



