**Summary**

Seismic experiments were conducted to calibrate the UCB/REACE-based acoustic physical modeling system. The experiments were designed to test the performance of the modeling facility in four key areas: (a) directivity of the source-receiver transducers; (b) effect of stacking traces on overall data quality; (c) time delay that the modeling system introduces to the data; and (d) the effectiveness of matched filters derived from (seismic) data gathered using the physical modeling system. Our results indicate that the transducers exhibit some transmission and receiver polar factors; amplitude variations depend on the angle of incidence and the rotation of the transducers (no dependence on the fluid). In addition, the relative delay caused by the transducers to each incident signal is inversely proportional to the frequency of the incident signal. Despite these factors, the variations are negligible for the range of incident angles that are relevant for most of the reflection seismic data we aim to simulate. For situations where the relative incidence angle is close to zero (0) and thus to about 63° or less, the relative points on each rotation angle exhibit negligible amplitude variation in our study.

**Experiment Setup**

The setup for the amplitude calibration and directivity tests consisted of one stationary arm and a rotating arm where the source and receiver transducers are mounted respectively. The transducers are at the same two positions to the base of the tank so the source and the central point of the transducer at the bottom of the water tank (Fig. A). The transducers were at the same two positions to the base of the tank so the source and the central point of the transducer at the bottom of the water tank. The total number of experiments conducted for each transducer pair was six (Fig. B). All in all, six different experiments were conducted for each transducer pair.

**Filtering the Reflection Data: What We Gain and Lose?**

![Filtering the Reflection Data](image)

The figures above show the reflection events coming off the top of a CMP survey over a flat reflector model. The data was specifically gathered to study the influence of the receiver on the reflection events as shown in the figures below. Note that for the particular data shown here, critical angle is about 45° and roughly equal to 300 MHz.