

Green's Theorem Preprocessing for Seismic Exploration

Research Themes

We develop the Green's theorem based wave separation method to remove two forms of coherent noise (e.g., surface waves and ghosts) of seismic data for onshore/offshore exploration, and advance the method to be applicable with current seismic acquisition capability. This research can provide effective prerequisites, which can (1) benefit subsequent data processing and imaging and (2) enhance structural analysis and amplitude analysis.

Recent Accomplishments

1. Developed deghosting method to process marine towed-streamer data without assuming the streamer being horizontal
2. Developed deghosting method to process ocean bottom pressure data and multicomponent displacement data
3. Developed elastic Green's theorem wave separation algorithm for onshore ground roll removal, without damaging the reflection data; and further advanced the method to be applicable with current seismic acquisition capability

Issues

1. Ground roll and ghost removal for both onshore and ocean bottom data with undulating topographies.
2. Onshore ground roll removal with complicated heterogeneous near surface properties

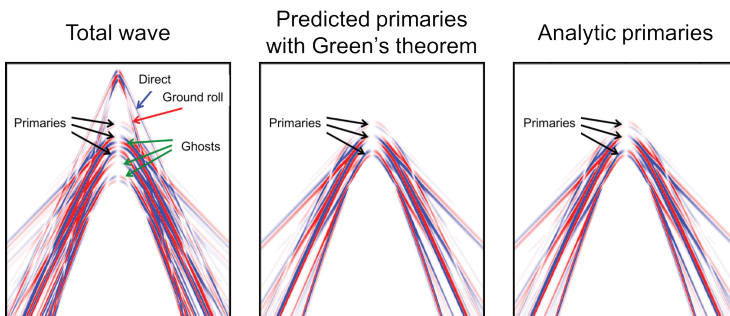
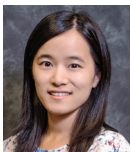


Figure: Seismic land data preprocessing for the removal of ground roll and ghost



Jing Wu

Major/Field of Study: Physics/Seismic Physics

College: College of Natural Sciences & Mathematics

Professor: Dr. Arthur Weglein

Email: hezewuj@gmail.com

PHYS