

Part I Exercises

Comprehensive Questions to discuss in the groups

What geophysical parameters make up the Earth model when the isotropic (anisotropic, viscoelastic) wave equation is used?

Explain qualitatively the physical model for an earthquake point source. What parameters would you expect in a file that initializes an earthquake simulation? Are the point source properties uniquely defined given seismic observations?

Explain the vector wave field operators gradient, divergence, and curl for seismic wave simulations (and observations). Why are seismic array measurements relevant in this context?

Explain the concept of linear systems, convolution, the convolution theorem, and its relevance for wave simulations. What is the difference between analytical and numerical Green's functions?

Describe the various rheologies for seismic wave propagation. How would you rate them in terms of modelling real seismic observations? What is reciprocity? How can this principle be used in seismic wave problems?

Explain qualitatively the physical model for an earthquake point source. What parameters would you expect in a file that initializes an earthquake simulation? Are the point source properties uniquely defined given seismic observations?

Programming exercises (Choice)

Run the Jupyter notebooks on Green's functions and Time reversal. Try to understand the code. Play with the parameters.