

model
 $m_k(\mathbf{x})$

for each shot:

forward propagation
 $\mathbf{v}(\mathbf{x}_s, \mathbf{x}_r, t)$
 $\mathbf{v}(\mathbf{x}, \omega)$

partial derivative wavefields

$$\frac{(\partial u_i)}{(\partial v_p)}, \frac{(\partial u_i)}{(\partial v_s)}, \frac{(\partial u_i)}{(\partial \rho')}$$

diagonal Hessian approximations
summed over all frequencies and
receivers

sum over all sources

$$H_a^{vp}(\mathbf{x}), H_a^{vs}(\mathbf{x}), H_a^{\rho}(\mathbf{x})$$

preconditioning operators

$$P^{vp}(\mathbf{x}), P^{vs}(\mathbf{x}), P^{\rho}(\mathbf{x})$$

preconditioning of gradients

$$\mathbf{p}_k(\mathbf{x})$$

for each receiver:

Green's receiver functions
 $G_{ji}(\mathbf{x}, \omega; \mathbf{x}_r, 0)$