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A, → longitudinal integral of R
a_c, → correlation length of R
ACF, → auto-correlation function
A_H, → longitudinal integral of R_H
a_{Hc}, → correlation length of R_H
a^{-1}, → corner wavenumber of P
A_L, → longitudinal integral of R_L
α, → P-wave velocity
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ASF, → angular spectral function
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β, → S-wave velocity
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$< \cdots >$, → ensemble average

c, → radius of a high velocity sphere
cascade, 13
CDF, → cumulative distribution function
CDF^{-1}, → inverse function of CDF
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convolution, 16, 38, 56, 78
$\otimes_s$, → convolution in space
$\otimes_{st}$, → convolution in space and time
$\otimes_t$, → convolution in time
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cr, → $\varepsilon_H^2 a_{Hc}^2 l_0^2$ for vector and $\varepsilon_H^2 a_{Hc}^2 k_0^2$ for scalar, spectrum division
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CV, → coefficient of variation

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δf_i, → equivalent body force
ΔL, → side length of the cubic receiver of MC simulation
Δr, → thickness of the receiver shell of MC simulation
Δt, → time step of MC simulation
Δt_{FD}, → time step of FD simulation
$\Delta \boldsymbol{x}$, → volume of receiver cube in MC simulation
$\Delta \boldsymbol{x}_{FD}$, → grid spacing of FD simulation
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$\frac{d\sigma}{d\Omega}$, → differential scattering cross-section
DST, → discrete sine transform
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E, → energy density
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ε, → velocity anomaly, or RMS fractional fluctuation, $\sqrt{R(0)}$
ε_H, → RMS fractional fluctuation $\sqrt{R_H(0)}$
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η, → tuning parameter of the spectrum division
$\{\boldsymbol{e}_\theta, \boldsymbol{e}_\phi, \boldsymbol{e}_r\}$, → set of base unit vectors in spherical coordianates
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$\boldsymbol{e}_\upsilon$, → polarization direction of scattered S wave
$\boldsymbol{e}_{\upsilon_{Rad}}$, → polarization direction of radiated S wave from the PSD source
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$\{\boldsymbol{e}_x, \boldsymbol{e}_y, \boldsymbol{e}_z\}$, → set of Cartesian base unit vectors
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f, → scattering amplitude of scalar waves or frequency
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f^B, → scalar Born scattering amplitude
F^{B**}_*, → vector Born scattering coefficient
FD, → finite difference simulation
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f^E, → scalar Eikonal scattering amplitude
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FFT, → fast Fourier transform
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G, → Green's function
G_0, → direct propagator with scattering loss
g_0, → total scattering coefficient
G_1, → Green's function, single scattering approximation
$G_{w0,ik}$, → vector-wave Green's function
$G^{F*}_{w0,ik}$, → vector-wave far-field Green's function
G_{w0}, → scalar-wave Green's function
Γ_2, → two-frequency mutual coherence function, TFMCF
$\Gamma_\perp$, → MCF at different $\boldsymbol{x}_\perp$
Γ_ω, → MCF at different ω
Gaussian random variable, 52, 131
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G_{Dif}, → Green's function, truncated diffusion solution
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geometrical ray theory, 119
G_H, → propagator in a homogeneous medium
G_i, → i-th comp. vector Green's function for energy density
g_{iso}, → isotropic scattering coefficient
g_l, → effective scattering coefficient using the cut-off angle
G_M, → Markov Green's function
G_{M0}, → Markov Green's function without travel-time fluctuation
G_{Pa}, → Green's function for isotropic scattering, Paasschens approximation
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G_s, → convolution of G and the source time function s
$g(\theta)$, → scattering coefficient
$g_*^{**}(\theta, \phi)$, → vector scattering coefficient

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$\mathcal{H}$, → Hilbert transform
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I, → wave intensity
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J_i, → energy flux density vector
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k_0, → scalar wavenumber or vector P-wavenumber
κ, → order of von Kármán-type random media
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l_0, → vector S-wavenumber
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λ, → Lame coefficient, or wavelength
λ_S, → S-wavelength
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M, → directional distribution of energy density
m, → wavenumber
M_0, → moment function
$\dot{M}_0$, → moment rate function
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MC, → Monte Carlo simulation
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MCF, → mutual coherence function
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MFP, → mean free path
MFT, → mean free time
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M_{pq}, → moment tensor
MS, → mean square
MS fractional velocity fluctuation, ε^2, 11
μ, → Lame coefficient or $\cos\psi$
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n, → number density of scatterers
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$\{\boldsymbol{n_1}, \boldsymbol{n_2}, \boldsymbol{n_3}\}$, → set of moving base unit vectors
normal distribution, 55, 131, 132
ν, → ratio of mass fractional fluctuation to velocity fractional fluctuation
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PDF, → probability density function, PDF
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PDF, spectrum division
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P_H, → high wavenumber component of P
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$\Phi(\phi)$, → PDF of angle ϕ
ϕ_R, → random phase
P_L, → long wavenumber component of P
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Pr, → probability
PRNG, → pseudo-random number generator
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PSD source, → point shear dislocation source
PSDF, → power spectral density function
pseudo-random number generator, 16, 26
p_X, → probability density function

$\boldsymbol{q}$, → direction of energy flux density
Q_c^{-1}, → coda Q^{-1}
Q_I^{-1}, → intrinsic Q^{-1}
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R, → auto-correlation function
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RG_{st}^{*}, → PRNG of shot time
R_H, → high wavenumber component of R
ρ, → mass density
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R_L, → long wavenumber component of R
RMS, → root mean square
RMS velocity amplitude, 5, 114, 116, 151

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$RG^{**}_{\theta,\phi}$, → PRNG of scattering angles (θ, ϕ)
RTT, → radiative transfer theory

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s^G, → Gaussian source time function
σ_0, → total scattering cross-section
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s^{PSD}, → PSD source time function
s^R, → Ricker source time function
SS scattering amplitude, 103
ST, → stochastic test function
stationary random function, 46
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subscript *tr*, → transport scattering
subscript/superscript H, → high-wavenumber component
subscript/superscript L, → long-wavenumber component
superscript *iso*, → isotropic scattering
superscript B, → Born approximation
superscript E, → Eikonal approximation
superscript G, → Gaussin-type
superscript PP, → vector PS scattering
superscript PS, → vector PS scattering
superscript SP, → vector SP scattering
superscript SS, → vector SS scattering
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TFMCF, → two-frequency mutual coherence function
$\Theta(\theta)$, → PDF of angle θ
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$T_{ij}(\theta, \phi)$, → rotation matrix
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t_M, → characteristic time of the Markov approximation
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u, → scalar wave
$U_{ij}(\theta, \phi)$, → torsional rotation matrix
Uniform[0,1], → uniform PRNG between 0 and 1
υ, → torsional rotation angle
u^R, → Ricker source time function in the wave domain
u_i, → displacement vector

V_0, → average propagation velocity
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$V(\boldsymbol{x})$, → inhomogeneous velocity

W, → total radiated energy
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W_P, → total radiated P-energy
W_S, → total radiated S-energy
w_t^*, → travel-time fluctuation
w_z^*, → travel-distance fluctuation

X_*^{**}, → basic scattering pattern
$\xi(\boldsymbol{x})$, → random function

$Z_{\theta,\phi}^{**}$, → PDF of vector scattering angles (θ, ϕ)
ζ, → tuning parameter of the spectrum division

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