Narrow-angle ray bending due to the long-scale comp. every time step

Wide-angle scattering due to the short-scale comp.?

Phase screen app. for \( P_L \)

\[ \Phi_L(k_c, \psi, V_0 \Delta t) \]

Born app. for \( P_S \)

\[ g_S(k_c, \psi)/(4\pi g_{S0}(k_c)) \]

Intensity Green function

\[ G(r, t) = \frac{n(r, t)}{4\pi r^2 \Delta r N} \]

Intensity

\[ I(r, t) = s(t) \otimes G(r, t) \]

(a) Spectrum division

Random medium \( P = P_L + P_S \)

(b) Monte Carlo simulation diagram according to the RTT

Start

Shooting a particle in a random direction

Move the particle with a time step \( \Delta t \)

Narrow-angle ray bending due to the long-scale comp. every time step

Wide-angle scattering due to the short-scale comp.?

Yes

No

Change direction

Total time step?

Yes

No

All particles?

Yes

No

End

\( \kappa = 0.5, \ \varepsilon = 0.05, \ a = 5 \text{ km}, \ V_0 = 4 \text{ km s}^{-1}, \ f_c = 3 \text{ Hz}, \ \zeta = 0.102 \)