

## Envelope broadening of cylindrical waves in 2-D random media: the Markov approximation and a comparison with numerical simulation

# Haruo Sato [1], Mike Fehler [2]

[1] Geophysics, Science, Tohoku University, [2] Los Alamos National Laboratory

<http://www.zisin.geophys.tohoku.ac.jp/~sato/>

The Markov approximation which stochastically deals with the parabolic-type wave equation is known as the excellent way to solve wave envelopes. We study the propagation of cylindrical waves radiated from a point source through randomly inhomogeneous media in 2D. In the case of Gaussian ACF, we can analytically solve the envelope shape. The resultant envelope rapidly increases after the onset, and takes the peak value a little later, and then gradually decreases with lapse time increasing. We compared the envelopes based on the Markov approximation with the results of numerical simulation. The coincidence is good for lapse times from the onset until the time when the envelope takes the half of the peak value.