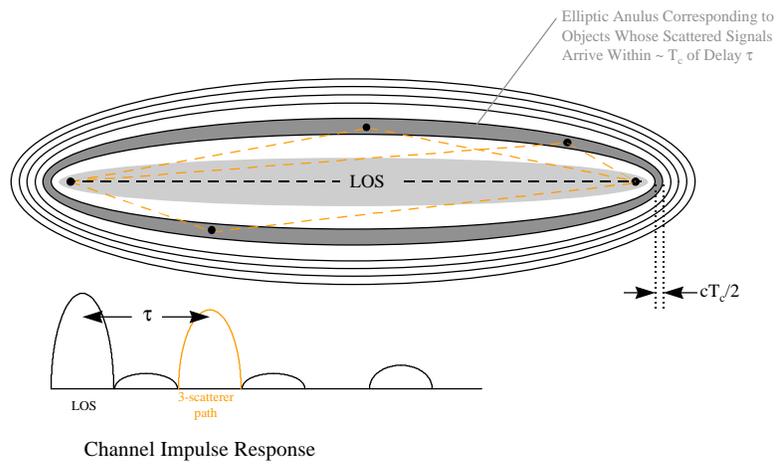


Multipath Models and Issues

John H. Cafarella
MICRILOR, Inc.

Resolution and Fluctuation

Line of Sight and Significant Single-Scattering Events



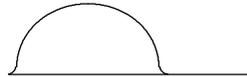
Resolution Scale and Multipath Cases



High-Resolution Channel Impulse Response with LOS and Speculars; Multipath Often Appears Log-Normal



High-Resolution Channel Impulse Response with Weak Single-Scattering and Multiple-Scattering Events (Diffuse); Multipath Rayleigh

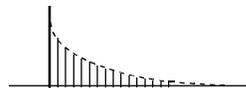


Low-Resolution Channel Impulse Response with LOS and Speculars; Multipath Rayleigh or Rician

Possible Multipath Models



Two resolved non-fluctuating paths; parameterize in relative delay and relative strength



Single non-fluctuating with diffuse Rayleigh-fluctuating "tail" having exponential envelope; parameterize in delay spread and ratio of total diffuse to "good path" strength



Single non-fluctuating with sparse Rayleigh-fluctuating "tail" having exponential envelope; parameterize in delay spread and ratio of total diffuse to "good path" strength



Diffuse Rayleigh-fluctuating "tail" having exponential envelope; parameterize in delay spread

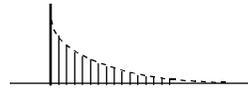
Most likely applicable to wideband transmission

Most likely applicable to narrowband transmission

Verifying Performance

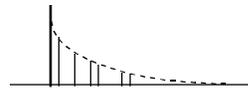


System Analysis
System Simulation
Channel Simulation

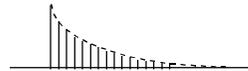


System Analysis
System Simulation*

Channel Simulators
Offer Only Modest
Numbers of Paths



System Analysis
System Simulation
Channel Simulation



System Analysis*
System Simulation**

* complicated by lack of deterministic path plus earlier assertion that 4 samples per chip must be used

** up to modest bandwidths only