3.3 WB Fading Model. Autocorrelation function. Ac(I,Iz; t; t+st) = E[(CCI,t)((Iz, t+st))] Wide sense stationary: WSS ACT, Tr; t, t+st) is independent of t AcCy, TriAt) = E[C*(T1, t) CCTz, t+st)] Uncorrelated, scattering: US E[dm(t)dn(t)]= E[dm(t)]· E[dn(t)] m+n.

Acci, (zist) SUSTech tet [C*(I,t) C(I,t+at)] = E(Z dnlt) ej ont) S(Z, - Intt)) mid dm(t+st)e j fm(t+st) S(Iz- Im(t+st)) = E[= dn(t)dm(t+st) &e i(n(t)- fm(t+st)) SCT,- Trift). S(Tz- Tm(++ Dt)) = # E [N(t) dn(t+st)e)(Pnt)-Pn(t+st)] 8(Z,- Zn(t)) 8(Zz- Tn(t+At)) ~ E[2] Lnit) e) (quit) - quittat)) Sti- Tn(t)) S(Tz- Tn(t)) $= E \left[\frac{10}{2} dn(t) e^{j(\phi_n(t) - \phi_n(t+\Delta t))} \right] \left[\frac{10}{8(t, -t, t)} \right]$ 8[7-72] >Ac(I, Iz; st) is non-zero only when I= 12 Accijat) = Acci, Zist)/8(0) or Ac(Z; Dt) = Ac(Z, Z; Dt) /SCO) Ac(21, 12; 1t)= A(21) st). 8(21-22)

Note that (n(t) = 271fcIn(t) - 271fo, n(t) t pn(t)- pn(t+st) = 27.fc in(t) - 27.fp,n(t)-t - 271 fc Tn (t+st) + 271 fo, x(+st) (t+st) = 27 forth st Suppose constant Accist) = E[= drit) ei(drt) - frettst)] S(I-Trit)] = E(Z) dnit/e) 271(p,nt) St. S(2-Init))] - NED = [dn(t)] e) 27 forte st sci- Into)

= not = [dn(t) & S(i-In(t))] e; 27 for n st

= not = [dn(t) & S(i-In(t))] e; 27 for n st Observation Given I, treat st as independent variable the frequencies of Acci, st) 's frequency components are the Doppler frequencies. -> Taking Fourier Transform w. Y. t. st, we get Voppler frequencies > cattering function. Section = Sentet, stie-jest post dist.

SUSTech
Sc(7,P) shows the Popple frequencies in the paths with delay I.
3.3.1 La Power Delay Profile.
Let st=0 in Ac(I;st), denote as Acq)
Thus, Accz) = Accz; 0) Power Delay Profite
$\frac{A_{c}(z) = E \left[C^{\prime}(z,t) C(z,t) \right] / \delta(c)}{= \sum_{n=1}^{N(t)} E \left[d_{n}^{\prime}(t) \right] \delta(z-z_{n}(t)) \right]}$
= \frac{1}{2} \overline{E[\lambda_n^2(t)]} \overline{E[\lambda_n^2(t)]} \overline{E[\lambda_n^2(t)]} \overline{10} \\ Average power of \overline{P(\text{hance of delay} \\ nth path \overline{1} = \overline{1}
Average power of 17 Chance of allay nth path ; = 7
Average channel power gran at
delay 7.