

SCATTERING - CONT'D

$$m = n - ik$$

$$= m \left(\lambda_{\text{RADIO WAVE}} \cdot T_{\text{MEDIUM/SCATTERER}} \right)$$

THE NORMALIZED BACKSCATTER CROSSSECTION, σ_B

$$\sigma_B = \frac{\sigma}{\pi \left(\frac{D}{2}\right)^2} \quad \frac{\pi D^2}{4} = \text{DROP'S CROSS-SECTION AREA}$$



IF $D \ll \lambda_{\text{RADIO WAVE}} \iff$ RAYLEIGH SCATTERING

(WHILE THE MIE THEORY CONTAINS "EVERYTHING", BUT IT'S COMPLICATED)

$$\sigma_{\text{RAYLEIGH}} = \frac{\pi^5}{\lambda^4} \left| \frac{m^2 - 1}{m^2 + 2} \right|^2 \cdot D^6 \propto D^6$$

- THAT'S HOW A DIPOLE RADIATES IN A VARIABLE ELECTRIC FIELD (ASSIGNED BY A RADAR, FOR EXAMPLE).