ACS 547 1 of 3 MONDAY, FEB. 17, 2025

LAST WEEK – ENCLOSURES. (LAST 2 QUESTIONS) NOTES)

NEXT WEEK – VIBRATION CONTROL

(1.) FAHY Book (SCRN. CAP.) & CARDONI

(2.) HONG ITO, ET AL. (2 of 2) PAPER.

SLIDE 5:

NORMAL INCIDENCE:

No COINCIDENCE DIP.

d ↑ → LOWER FREQS.
d ↓ → HIGHER FREQS.

SLIDE 6:

FREQ. RESOLUTION IN SIMULATION.

Too FINE; ARTIFACTS IN PLOTS.

- DECREASE RESOLUTION.

SLIDE 8:

SLIDE 9:

SLIDE 14:

"A LITTLE GOES ALONG WAY..."

MATERIAL REMOVES DIPS.

DISPATION BY VISCOSITY.

N → PARTICLE VELOCITY.

SLIDE 11:

STILL GET DIP AT CRITICAL FREQUENCY.

SLIDE 12:

SLIDE 13: EXAMPLE.

NO ABSORPTION SOURCE, ABSORPTION ON RENER SIDE
TL IS CLOSE TO IL.

ASSUME NEED 36 dB of TL.

RESILENT CHANNELS.

ALLOW OUT-OF-PHASE MOTION.

"GIVE IT THE BUSINESS..."

SLIDE:

ENCLOSURES

kd << 1 → "close-fitting" enclosure.

d → separation between element and wall.

SLIDE 20: $kd << 1$ → "HELMHOLTZ" NUMBER.

$$kd = \frac{2\pi f}{c} \cdot d = \frac{2\pi}{\lambda} \cdot d.$$

UNITLESS NUMBER.

NON-DIMENSIONAL WAVELENGTH OR FREQUENCY

↓ ASSUME ONLY NORMAL INCIDENCE

No COINCIDENCE.

* COMPLIANCE $\propto \frac{1}{\text{STIFFNESS}}$ *

SLIDE 21:

DESIGN

LOW, MEDIUM, OR HIGH.

SLIDE 22:

α: ASPECT RATIO OF WALL; GREATER THAN 1

$$\frac{\text{LONGER WALL}}{\text{SHORTER WALL}}.$$

SLIDE 23:

SLIDE 24:

SLIDE 25: