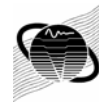


Infinite Element Considerations

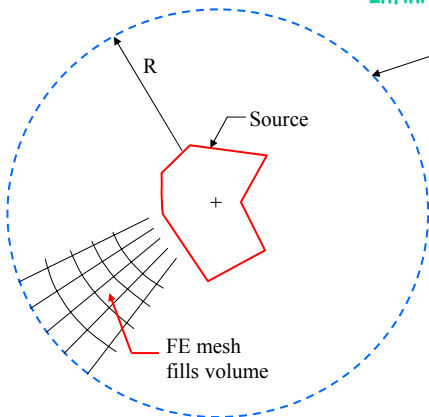
David Herrin
University of Kentucky

Vibro-Acoustics Consortium



Infinite Element Definition

Infinite Elements

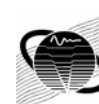


Imaginary spheroid in the farfield where infinite elements are placed

- Size of the sphere (may differ for a transient analysis)

$$R \geq \frac{3\lambda}{2\pi}$$

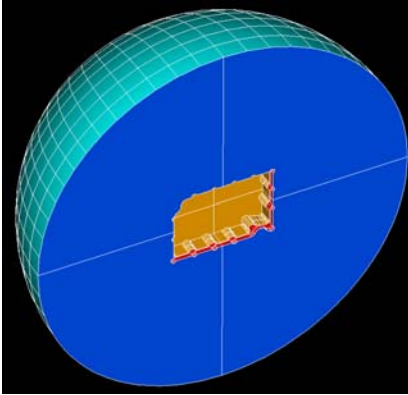
Vibro-Acoustics Consortium



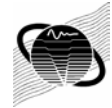
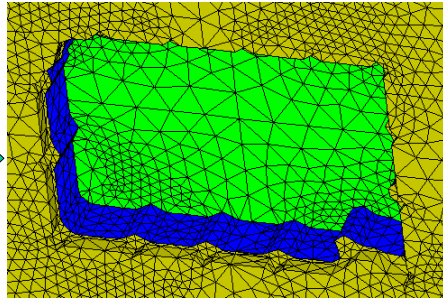
Finite Element Model Creation

Infinite Elements

Solid Model

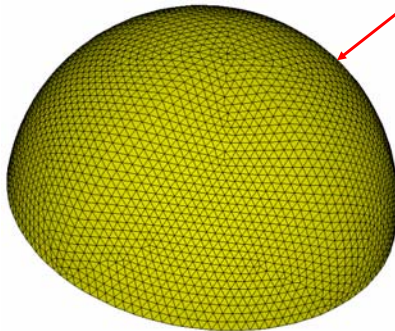


Finite Element Model



Finite Element Model Creation

Infinite Elements



Imaginary spheroid in the farfield where infinite elements are placed

Order n defines the multipole expansion used to calculate the pressure at field points outside the FE mesh domain proper

$$P(r) = \frac{e^{-ikr}}{r} \sum_{n=0}^{\infty} \frac{F_n(r, \theta, \phi)}{r^n}$$

Choose from 1st to 10th order infinite elements



Test Case - Transient

