X

Due on 2017-10-18, 23:59 IST

1.Consider a pulsating sphere of radius 0.2m vibrating harmonically at 200 Hz in air (density = 1.2 kg/m^3 , sound speed = 340 m / sec) . The radial velocity of the sphere is 0.1 m/sec. We are interested to determine the acoustic pressure at a point 10 m from the sphere.
(a) Justify that the monopole assumption is appropriate for this problem.
(b) Determine the strength of the monopole..
(c) Determine the acoustic pressure (in Pascals) at the point of interest(10 m).

2.. Now consider two such pulsating spheres vibrating in an out of phase fashion. The centers of the two spheres are separated by a distance of 0.5m. We are interested to determine the acoustic pressure at points located at a distance of 10 m from the center of the two pulsating spheres.
(a) Justify that the dipole assumption is appropriate for this problem
(b) Determine the strength of the dipole.
(c) Plot the directivity of the acoustic pressure (in Pascals) at the radial location of 10 m from the center of the two pulsating spheres. In the plot indicate the direction of maximum and minimum acoustic radiation.
Please upload the jpeg file of this plot.
Hint: For directivity plot use the polar plot option in MATLAB. The command in MATLAB to accomplish this task is “polar”. It works in almost the same way as “plot”. Learn more about how to use this command using “help polar” in MATLAB or from other web resources.

Your Submission:

Due Date Exceeded.
As per our records you have not submitted this assignment.

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