



Acoustics Research Laboratory

Mechanical Engineering Department
Iran University of Science and Technology
Director: Dr. Seyed M. Hasheminejad
E-mail: Hashemi@iust.ac.ir

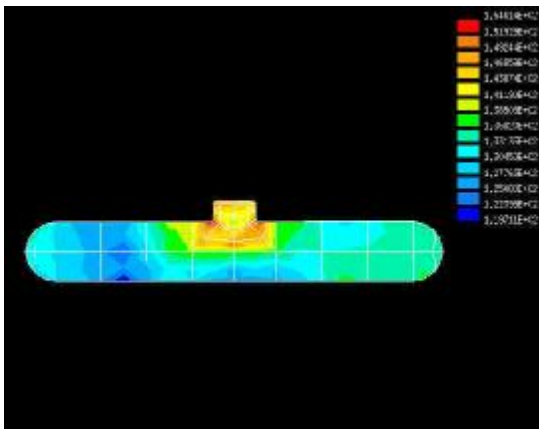
Interests

Development of analytical, computational and experimental techniques applicable to

- ✓ Structural Acoustics and Fluid/Structure Interaction
- ✓ Underground Sound (seismo-acoustics), Atmospheric Acoustics and Underwater Acoustics
- ✓ Industrial Ultrasonics, Nondestructive Testing, Medical Ultrasonics and Transduction
- ✓ Stress Wave Concentrations and Dynamic Thermoelasticity
- ✓ Wave propagation in FGM, Piezoelectric, and Reinforced Composites
- ✓ Environmental Acoustics, Building Acoustics and Noise and Vibration Control.

Equipments

- ✓ Hand held sound level meter
- ✓ Hand held sound frequency analyzer (B&K 2250)
- ✓ Network of Quad-Opteron Workstations



Publications

1. **S. M. Hasheminejad** and T.L. Geers, 1991, "Doubly asymptotic approximations for an acoustic halfspace," in *Structural Acoustics*, R F Keltie, *et. al.*, eds., NCA-Vol. 12/AMD-Vol. 128, American Society of Mechanical Engineers, New York, pp. 129-138.
2. **S. M. Hasheminejad** and T.L. Geers, "Linear vibration analysis of an ultrasonic cleaning problem," *Journal of the Acoustical Society of America*, 1991, Vol. 90, no. 6, pp. 3238-3247.
2. **S. M. Hasheminejad** and T.L. Geers, "Doubly asymptotic approximations for an acoustic halfspace," *ASME Journal of Vibration and Acoustics*, 1992, Vol. 114, pp. 555-563.
3. **S. M. Hasheminejad** and T.L. Geers, "Modal impedances for two spherical surfaces in a thermoviscous fluid," *Journal of the Acoustical Society of America*, 1993, Vol. 94, pp. 2205-2214.
4. **S. M. Hasheminejad**, "Modal impedances for a spherical source in a fluid-filled spherical cavity embedded within a fluid-infiltrated elastic porous medium," *International Journal of Solids and Structures*, 1998, Vol. 35, pp. 129-148.
5. **S. M. Hasheminejad**, "Modal acoustic force on a spherical radiator in an acoustic halfspace with locally reacting boundary," *Acustica/Acta Acustica*, 2001, Vol. 87, pp. 443-453.
6. **S. M. Hasheminejad** and H. Hosseini, "Radiation loading of a cylindrical source in a fluid-filled cylindrical cavity embedded within a fluid saturated poroelastic medium," *ASME Journal of Applied Mechanics*, 2002, Vol. 69, pp. 675-683.
7. **S. M. Hasheminejad** and H. Hosseini, "Dynamic stress concentration near on a fluid-filled permeable borehole induced by general modal vibrations of an internal cylindrical radiator," *Soil Dynamics and Earthquake Engineering*, 2002, Vol. 22, pp. 441-458.
8. **S. M. Hasheminejad** and B. Harsini, "Effects of dynamic viscoelastic properties on acoustic diffraction by a solid sphere," *Archive of Applied Mechanics*, 2002, Vol. 72, pp. 697-712.
9. **S. M. Hasheminejad** and N. Safari, "Dynamic viscoelastic effects on sound wave diffraction by spherical and cylindrical shells submerged in and filled with viscous compressible fluids," *Shock and Vibration*, 2003, Vol. 10, pp. 339-363.
10. **S. M. Hasheminejad** and M. Azarpeyvand, "Modal vibrations of an infinite cylinder in an acoustic halfspace," *International Journal of Engineering Science*, 2003, Vol. 41, pp. 2253-2271.
11. **S. M. Hasheminejad** and M. Azarpeyvand, "Energy distribution and radiation loading of a cylindrical source suspended within a nonconcentric fluid cylinder," *Acta Mechanica*, 2003, Vol. 164, pp. 15-30.
12. **S. M. Hasheminejad** and M. Azarpeyvand, "Eccentricity effects on acoustic radiation from a spherical source suspended within a thermoviscous fluid sphere," *IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control*, 2003, Vol. 50, pp. 1444-1454.
13. **S. M. Hasheminejad** and M. Azarpeyvand, "Non-axisymmetric acoustic radiation from a transversely oscillating rigid sphere above a rigid/compliant planar boundary," *Acustica/Acta Acustica*, 2003, Vol. 89, pp. 998-1007.
14. **S. M. Hasheminejad**, "Modal acoustic impedance force on a spherical source near a rigid interface," *Acta Mechanica Sinica*, 2003, Vol. 19, no. 1, pp. 33-39.
15. **S. M. Hasheminejad** and M. Najafi, "Modeling and prediction of acoustic performance of reactive mufflers based on transmission loss approach," *Amirkabir Journal of Science and Technology*, 2003, Vol. 14, pp. 755-764.
16. **S. M. Hasheminejad** and M. Azarpeyvand, "Acoustic radiation from a pulsating spherical cap set on a spherical baffle near a hard/soft flat surface," *IEEE Journal of Oceanic Engineering*, 2004, Vol. 29, no. 1, pp. 110-117.

17. **S. M. Hasheminejad** and S. A. Badsar, "Acoustic scattering by a poroelastic sphere near a flat boundary," *Japanese Journal of Applied Physics*, 2004, Vol. 43, no. 5A, pp. 2612-2623.
18. **S. M. Hasheminejad** and M. Azarpeyvand, "Harmonic radiation from a liquid-filled spherical acoustic lens with an internal eccentric spherical source," *Mechanics Research Communications*, 2004, Vol. 31, no. 1, pp. 493-506.
19. **S. M. Hasheminejad** and M. Azarpeyvand, "Sound radiation from a liquid-filled underwater spherical acoustic lens with an internal eccentric baffled spherical piston," *Ocean Engineering*, 2004, Vol. 31, pp. 1129-1146.
20. **S. M. Hasheminejad** and S. A. Badsar, "Acoustic scattering by a pair of poroelastic spheres," *Quarterly Journal of Mechanics and Applied Mathematics*, 2004, Vol. 57, pp. 95-113.
21. **S. M. Hasheminejad** and M. Azarpeyvand, "Vibrations of a cylindrical radiator over an impedance plane," *Journal of Sound and Vibration*, 2004, Vol. 278, pp. 461-477.
22. **S. M. Hasheminejad** and S. Mehdizadeh, "Acoustic radiation from a finite spherical source placed in fluid near a poroelastic sphere," *Archive of Applied Mechanics*, 2004, Vol. 74, pp. 59-74.
23. **S. M. Hasheminejad** and M. Azarpeyvand, "Sound radiation due to modal vibrations of a spherical source in an acoustic quarterspace," *Shock and Vibration*, 2004, Vol. 11, pp. 625-635.
24. **S. M. Hasheminejad** and M. Azarpeyvand, "Acoustic radiation from a shell-encapsulated baffled cylindrical cap," *Acoustical Physics*, 2005, Vol. 51, pp. 419-427.
25. **S. M. Hasheminejad** and N. Safari, "Acoustic scattering from viscoelastically coated spheres and cylinders in viscous fluids," *Journal of Sound and Vibration*, 2005, Vol. 280, pp. 101-125.
26. **S. M. Hasheminejad** and M. Azarpeyvand, "Acoustic radiation from a cylindrical source close to a rigid corner," *Zeitschrift fur Angewandte Mathematik und Mechanik*, 2005, Vol. 85, pp. 66-74.
27. **S. M. Hasheminejad** and S. A. Badsar, "Elastic wave scattering by two spherical inclusions in a poroelastic medium," *ASCE Journal of Engineering Mechanics*, 2005, Vol. 131, pp. 953-965.
28. **S. M. Hasheminejad** and M. Azarpeyvand, "Radiation impedance loading of a spherical source in a two-dimensional perfect acoustic waveguide," *Acoustical Physics*, 2006, Vol. 52, pp. 104-115.
29. **S. M. Hasheminejad**, "Acoustic scattering by a fluid-encapsulating spherical viscoelastic membrane including thermoviscous effects," *Journal of Mechanics*, 2005, Vol. 21, pp. 205-215.
30. **S. M. Hasheminejad** and S. A. Badsar, "Scattering of plane waves by a rigid sphere in an acoustic quarterspace," *JSME International Journal*, 2005, Vol. 48, pp. 776-782.
31. **S. M. Hasheminejad** and M. A. Alibakhshi, "Dynamic viscoelastic and multiple scattering effects in fiber suspensions," *Journal of Dispersion Science and Technology*, 2006, Vol. 27, pp. 219-234.
32. **S. M. Hasheminejad** and S. Mehdizadeh, "Acoustic performance of a multilayer close-fitting hemispherical enclosure," *Noise Control Engineering Journal*, 2006, Vol. 54, pp. 86-100.
33. **S. M. Hasheminejad** and R. Avazmohammadi, "Acoustic diffraction by a pair of poroelastic cylinders," *Zeitschrift fur Angewandte Mathematik und Mechanik*, 2006, Vol. 8, pp. 589-605.
34. **S. M. Hasheminejad** and M. Azarpeyvand, "Sound pressure attenuation in an acoustically lined parallel plate duct containing an off-center cylindrical radiator," *Acustica/Acta Acustica*, 2006, Vol. 92, pp. 417-426.
35. **S. M. Hasheminejad** and R. Sanaei, "Ultrasonic scattering by a viscoelastic fiber of elliptic cross section suspended in a viscous fluid medium," *Journal of Dispersion Science and Technology*, 2006, Vol. 27, pp. 1165-1179.

36. **S. M. Hasheminejad** and R. Avazmohammadi, "Harmonic wave diffraction by two circular cavities in a poroelastic formation" *Soil Dynamics and Earthquake Engineering*, 2007, Vol. 27, pp. 29-41.
37. **S. M. Hasheminejad** and M. A. Alibakhshi, "Ultrasonic scattering from compressible cylinders including multiple scattering and thermoviscous effects." *Archives of Acoustics*, 2006, Vol. 31, pp. 243-263.
38. **S. M. Hasheminejad** and M. A. Alibakhshi, "Two-Dimensional Scattering from an Impenetrable Cylindrical Obstacle in an Acoustic Quarterspace," *Forschung im Ingenieurwesen (Engineering Research)*, 2006, Vol. 70, pp. 179-186.
39. **S. M. Hasheminejad** and M. Maleki, "Diffraction of elastic waves by a spherical inclusion with an anisotropic graded interfacial layer and dynamic stress concentrations," *Journal of Nondestructive Evaluation*, 2006, Vol. 25, pp. 67-81.
40. **S. M. Hasheminejad** and R. Avazmohammadi, "Elastic wave scattering in porous unidirectional fiber-reinforced composites" *Journal of Reinforced Plastics and Composites*, 2007, to appear.
41. **S. M. Hasheminejad** and M. A. Alibakhshi, "Diffraction of sound by a poroelastic cylindrical absorber near an impedance plane," *International Journal of Mechanical Sciences*, 2007, Vol. 49, pp. 1-12.
42. **S. M. Hasheminejad** and M. Maleki, "Interaction of a plane progressive sound wave with a functionally graded spherical shell," *Ultrasonics*, 2007, to appear.
43. **S. M. Hasheminejad** and R. Sanaei, "Acoustic scattering by an elliptic cylindrical absorber," *Acustica/Acta Acustica*, 2007, to appear.
44. **S. M. Hasheminejad** and R. Sanaei, "Ultrasonic scattering by a spheroidal suspension including dissipative effects" *Journal of Dispersion Science and Technology*, to appear.
45. **S. M. Hasheminejad** and A.K. Miri, "Effect of inter-fiber distance on energy transfer in unidirectional composites containing transverse ultrasonic waves" *Advanced Composites Letters*, 2007, to appear.
46. **S. M. Hasheminejad** and A. H. Pasdar, "Computation of acoustic field by a spherical source near a thermoviscous fluid sphere," *Journal of Computational Acoustics*, 2007, to appear.

Mathematica Packages for Computation of Spheroidal and Elliptical Wave Functions of General Arguments

Elliptical Wave functions: <http://acousticcodes.drivehq.com/Elliptical.nb>

Spheroidal Wave functions: <http://acousticcodes.drivehq.com/Spheroidal.nb>

Field Equations Derivation: <http://acousticcodes.drivehq.com/Coordinate.nb>

For more information please contact r_sanaei@mecheng.iust.ac.ir