Dr. Alireza Shaterzadeh

Associate Professor of Mechanical Engineering

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Educations:

PhD in Mechanical Engineering at University of Guilan (2005-2011)
Thesis Title:" The Effects of Piezoelectrics on Thermo-elastic Post-buckling of Composite Hemispherical Shells with a Cut-out"
Supervisor: Prof. M. Darvizeh & Prof. A. Darvizeh

Msc in Mechanical Engineering at University of Guilan (2003-2005)
Dissertation Title:" Static and Dynamic Analysis Composite Cylindrical Shells Conveying Hot or Cold Fluid"
Graduated with honor (with a GPA 3.4 out of 4)

Bsc in Mechanical Engineering at Razi University (1999-2003)
Graduated with honor (with a GPA 3.2 out of 4)

Teaching & Research Field :

Solid Mechanics

Specific Topics of Interest :

Vibration and Buckling Analyses of Beams, Plates and Shells.
Behavior of Composite, FGM and Piezoelectric.
Modern Theories of Plates and Shells.
Non-linear Mechanics.
Mathematical and Computational Methods in Mechanics.
FE Analysis.
Stability .

Publications :

Conference papers :

1. M. Darvizeh, A. Darvizeh, **A.R. Shaterzadeh** and R. Ansari, "Static and dynamic analysis composite cylindrical shells with semi analytical finite element", 1th Aerospace Structures Conference, Tehran, Iran, 2006. (in Persian)
2. M. Darvizeh, A. Darvizeh and **A.R. Shaterzadeh**, "Thermal buckling analysis of thick composite cylindrical shells", 27th Conference CAM3S, Poland, 2006.
3. M. Darvizeh, M. Tavoli, A. Bagheri, R. Ansari, A. Akbarzadeh and **A.R. Shaterzadeh**, "The analysis of frequency response of the smart suspension systems", 1th Aerospace Structures Conference, Tehran, Iran, 2006. (in Persian)
4. A. Shahabi and **A.R. Shaterzadeh**, "Thermal buckling analysis of FGM annular plates with temperature dependent properties on elastic foundation", 14th International Conference of Iranian Aerospace Society, Tehran, Iran, 2015. (in Persian)
5. **A.R. Shaterzadeh** and K. Foroutan, "Nonlinear dynamic analysis of eccentrically stiffened FGM cylindrical shells with elastic foundation under uniform external pressure", 1th Modern Achievements on Aerospace and Related Sciences Conference, Tehran, Iran, 2015. (in Persian)
6. **A.R. Shaterzadeh** and K. Foroutan, "Nonlinear dynamic analysis of ES-FG cylindrical shells with temperature dependent properties and elastic foundation under uniform internal pressure," 1th Modern Achievements on Aerospace and Related Sciences Conference, Tehran, Iran, 2015.
7. **A.R. Shaterzadeh** and S. Asadi, "Free vibration analysis of FG cylindrical shells under axial loading using third shear deformation theory", 2th National Conference on Development of Civil Engineering, Architecture, Electricity and Mechanical in Iran, Gorgan, Iran, 2015. (in Persian)
8. **A.R. Shaterzadeh** and M. Taheri, "Buckling analysis of composite conical shells using semi analytical finite element method", 1th International Conference on New Research Achievements in Mechanics, Mechatronics & Biomechanics, Tehran, Iran, 2016. (in Persian)
9. **A.R. Shaterzadeh** and M. Taheri, "Buckling analysis of composite truncated conical shells under mechanical loading in thermal environments", 223th International Conference on Mechanical and Aerospace Engineering (ICMAE), Putrajaya, Malaysia, 2017 .
10. H. Khalajzadeh, S.V. Hosseini and **A.R. Shaterzadeh**, "High fatigue life prediction of engine mounting bracket using finite element method and improvement fatigue life of engine mounting bracket", 12th International Conference on Internal Combustion Engines and Oil, Tehran, Iran, 2022. (in Persian)
11. M. Mirzapour Roudpishi, S.M. Hosseini Farrash and **A.R. Shaterzadeh**, "Investigation of the critical buckling load of glass/epoxy composite beams containing nanoparticles under the influence of sunlight", 21th International Conference of Iran Air and Space Association, Tehran, Iran, 2023. (in Persian)

Journal paper :

1. M. Darvizeh, A. Darvizeh, **A.R. Shaterzadeh** and R. Ansari, "Thermal buckling analysis of moderately thick composite cylindrical shells under axi-symmetric thermal loading", Aerospace Mechanics Journal, 3(2) , pp.99-107, 2007.
2. M. Darvizeh, A. Darvizeh, **A.R. Shaterzadeh** and R. Ansari, "Thermal buckling of spherical shells with cut-out", Journal of Thermal Stresses, 33(5), pp.441-58, 2010 .
3. M. Darvizeh, A. Darvizeh, **A.R. Shaterzadeh** and R. Ansari, "Active control of thermal buckling of shells of revolution using piezoelectric patches", Journal of Thermal Stresses, 34(1), pp.75-93, 2011 .
4. **A.R. Shaterzadeh**, M. Darvizeh, A. Darvizeh and R. Ansari, "Thermal post-buckling of shells of revolution", Journal of Thermal Stresses, 34, pp.1035-1053, 2011 .
5. **A.R. Shaterzadeh**, "Free vibration analysis of composite hemispherical shells with cut-out", Journal of Solids and Fluids Mechanic, 3(1), pp.33-42, 2014. (in Persian)
6. **A.R. Shaterzadeh**, S. Abolghasemi and R. Rezaei, "Finite element analysis of thermal buckling of rectangular laminated composite plates with circular cutout", Journal of Thermal Stresses, 37(5), pp.604-623, 2014 .
7. S. Abolghasemi, **A.R. Shaterzadeh** and R. Rezaei, "Thermo-mechanical buckling analysis of functionally graded plates with an elliptic cutout", Journal of Aerospace Science and Technology, 39, pp.250-259, 2014 .
8. R. Rezaei, **A.R. Shaterzadeh** and S. Abolghasemi, "Buckling analysis of rectangular functionally graded plates with an elliptic hole under thermal loads", Journal of Solid Mechanics, 7(1), pp.41-57, 2015 .
9. **A.R. Shaterzadeh**, R. Rezaei and S. Abolghasemi, "Thermal buckling analysis of perforated functionally graded plates", Journal of Thermal Stresses, 38, pp.1250-1268, 2015 .
10. **A.R. Shaterzadeh** and K. Foroutan, "Post-buckling analysis of eccentrically stiffened FGM cylindrical shells under external pressure and elastic foundation", Modares Mechanical Engineering, 15(7), pp.80-88, 2015. (in Persian)
11. **A.R. Shaterzadeh**, "Thermo-mechanical buckling analysis of FGM plates with circular cut out", Journal of Solids and Fluids Mechanic, 5(2), pp.99-109, 2015. (in Persian)
12. **A.R. Shaterzadeh** and K. Foroutan, "Post-buckling of cylindrical shells with spiral stiffeners under elastic foundation", Journal of Structural Engineering and Mechanics, 60(4), pp.615-631, 2016.

13. H. Behzad, **A.R. Shaterzadeh** and M. Shariyat, “Thermal buckling analysis of functionally graded perforated annular sector plates using 3D elasticity theory”, Journal of Thermal Stresses, 40(12), pp. 1545-1562, 2017.
14. **A.R. Shaterzadeh** and K. Foroutan, “Non-linear dynamic analysis of asymmetrical eccentrically stiffened FGM cylindrical shells with non-linear elastic foundation under external pressure”, Journal of Solid Mechanics, 9(4), pp.849-864, 2017.
15. **A.R. Shaterzadeh** and M. Taheri, “Buckling analysis of composite truncated conical shells under mechanical loading in thermal environments”, International Journal of Mechanical and Production Engineering, 5(10), pp.74-77, 2017.
16. **A.R. Shaterzadeh** and K. Foroutan, “Nonlinear dynamic analysis of eccentrically stiffened FGM cylindrical shells with elastic foundation under uniform external pressure”, Aerospace Mechanics Journal, 14(1), pp.11-26, 2018. (in Persian)
17. S. Karamian and **A.R. Shaterzadeh**, “Nonlinear hygro-thermo-mechanical buckling analysis of eccentrically stiffened thin FG cylindrical panel on elastic foundations”, Modares Mechanical Engineering, 18(2), pp. 73-83, 2018. (in Persian)
18. **A.R. Shaterzadeh**, H. Behzad, and M. Shariyat, “Stability analysis of composite perforated annular sector plates under thermomechanical loading by finite element method”, International Journal of Structural Stability and Dynamics, 18(7), 1850100 (1-23), 2018.
19. K. Foroutan, **A.R. Shaterzadeh** and H. Ahmadi, “Nonlinear dynamic analysis of spiral stiffened functionally graded cylindrical shells with damping and nonlinear elastic foundation under axial compression”, Journal of Structural Engineering and Mechanics, 66(3), pp.295-303, 2018.
20. M. Shariyat, H. Behzad and **A.R. Shaterzadeh**, “3D thermomechanical buckling analysis of perforated annular sector plates with multiaxial material heterogeneities based on curved B-spline elements”, Composite Structures, 188, pp.89-103, 2018.
21. H. Behzad, **A.R. Shaterzadeh** and M. Shariyat, “Mechanical buckling analysis of composite annular sector plate with bean-shaped cut-out using three dimensional finite element method,” Journal of Solid Mechanics, 10 (3), pp.476-488, 2018.
22. **A.R. Shaterzadeh,** K. Foroutan and H. Ahmadi, “Nonlinear static and dynamic thermal buckling analysis of spiral stiffened functionally graded cylindrical shells with elastic foundation”, International Journal of Applied Mechanics, 11 (01), 1950005, 2018.
23. K. Foroutan, **A.R. Shaterzadeh** and H. Ahmadi, “Nonlinear dynamic analysis of spiral stiffened cylindrical shells rested on elastic foundation”, Steel and Composite Structures, An International Journal, 32(4), pp. 509-519, 2019.
24. S. Mahdavi**, A.R. Shaterzadeh** and M. Jafari, “Determination of optimum effective parameters on thermal buckling of hybrid composite plates with quasi-square cut-out using a genetic algorithm”, Engineering Optimization, 5(1), pp.106-121,2020.
25. K. Foroutan, **A.R. Shaterzadeh** and H. Ahmadi, “Nonlinear static and dynamic hygrothermal buckling analysis of imperfect functionally graded porous cylindrical shells”, Applied Mathematical Modelling, 77, pp.539-553, 2020.
26. M. Raeisi, **A.R. Shaterzadeh** and S.M. Hosseini Farrash, “Effect of carbon nanotubes on the critical buckling load of composite reinforced columns: An experimental

approach", Modares Mechanical Engineering 20 (12), pp.2679-2688, 2020. (in Persian)

27. Z. Mazroei and **A.R. Shaterzadeh**, "Analysis of buckling of functionally graded carbon nanotubes-reinforced composite beams in hygrothermal environments", 10(3), pp. 43-62, 2020. (in Persian)
28. S. Mahdavi**, A.R. Shaterzadeh** and M. Jafari, "Optimization of influence parameters on thermal buckling of hybrid composite plates with cutout using genetic algorithm", Amirkabir Journal of Mechanical Engineering, 52(8), pp. 2107-2122, 2020. (in Persian)
29. S. Mahdavi**, A.R. Shaterzadeh** and M. Jafari, "Optimum design for thermal buckling of composite plates with semi triangular cutout using PSO algorithm", Structural Engineering and Mechanics, 80(1), pp.83-90, 2021.
30. S. Khoshkar, S.A. Sina and **A.R. Shaterzadeh**, "On the deviation from cyclic symmetry in a spinning ring under moving electromagnetic loading", 53 (6), pp.3891-3910, 2021. (in Persian)
31. K. Foroutan, **A.R. Shaterzadeh** and H. Ahmadi, "Static and dynamic postbuckling analysis of imperfect SSFG cylindrical shells surrounded by nonlinear elastic foundation subjected to an axial compression", Mechanics of Advanced Materials and Structures, 29 (12), pp. 1769-1781, 2022.
32. M. Mirzapour Roudpishi, S.M. Hosseini Farrash and **A.R. Shaterzadeh**, "Effect of zinc oxide nanoparticles on critical buckling load of glass/epoxy composites exposed to sunlight irradiation", Polymers and Polymer Composites, 31, 2023.
33. B. Yakhchian and **A.R. Shaterzadeh**, "Thermal Buckling and Postbuckling Analysis of Plates Reinforced with Graphene Platelets Using Differential Quadrature Method", Aerospace Mechanics 19 (4), pp.103-117, 2023. (in persian).
34. **A.R. Shaterzadeh**, U. Topal, V. Hadad and A. K. Das, "Buckling load optimization of laminated composite plates with elliptical hole under different non-uniform edge loads using bonobo optimizer algorithm", Mechanics of Advanced Materials and Structures, pp.1-19, 2024.
35. H. Khalajzadeh, S.V. Hosseini and **A.R. Shaterzadeh**, "Study of the effect on manufacturing parameters on the fatigue behavior of aluminum engine mounting bracket", Automotive Science and Engineering, 14(4), pp.4528-4540, 2024.
36. H. Talati and **A.R. Shaterzadeh**, "Study on the load-end shortening of FGP cylindrical shells under external pressure in a thermal environment", Thin-Walled Structures, 205, 112492. 2024.
37. F. Jafari Maryaki and **A.R. Shaterzadeh**, "Free vibration analysis of FGP complex shells with variable thickness", AUT Journal of Mechanical Engineering, 2025. 9(2), pp.99-112, 2025.
38. A. Moradi and **A.R. Shaterzadeh**, "Analysis of linear and nonlinear vibrations of composite rectangular sandwich plates with lattice cores", Comput Mater Contin., 82(1), pp.223-257, 2025.
39. S. Etehadi and **A.R. Shaterzadeh, "**Exploring the nonlinear load-deflection response of functionally graded porous cylindrical panels under thermal environment: An

Isogeometric analysis approach", Structural Engineering and Mechanics, 93(4), pp. 303-316, 2025.

40. **A.R. Shaterzadeh**, U. Topal, V. Hadad and A.K. Das, "Bonobo optimizer algorithm for thermomechanical stability analysis of laminated plates with a hole", International Journal of Steel Structures, 25, pp. 376-388, 2025.
41. A. Moradi and **A.R. Shaterzadeh**, "Nonlinear forced vibration and resonance analysis of composite rectangular sandwich plates with lattice cores", Int J Mech Mater Des, 2025.
42. H. Talati and **A.R. Shaterzadeh**, "Investigating nonlinear buckling and post-buckling characteristics of functionally graded porous cylindrical shells under external pressure and thermal conditions", Continuum Mechanics and Thermodynamics, 37(51), pp. 1-19, 2025.

Industrial and Academic Experiences :

Faculty member of Shahrood University of Technology from 2011 to present .
Group manager of faculty of mechanical engineering (2013-2015)
Manager of R&D department of Ferro Gilan Complex (FGC) (2006-2011)

List of some projects at FGC :

1. Static Analysis of Columns of Furnace Water Line
2. Investigation of Heat Transfer in Walls of Furnace
3. Causes of Rolling Mills Fracture
4. Effect of Cooling Conditions on Hot Rolled Strips
5. The Causes of Dust Production during Hot Rolling of Strip at Finishing Stands
6. Inclusion at Hot Rolled Strips and Its Effects on Mechanical Properties of Strip
7. Survey the Possibility of Rolling MR Steels
8. Scale Formation during Preheating of Steel Slabs at Furnace
9. Heating of Slab at Pusher Type Preheating Furnaces
10. Defects of Hot Rolled Strips Including: Edge Crack of Strip, Wavy Edge, Wave at Center of Strip and Coil Break
11. Optimal Condition for Cooling Rolling Mills

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