Masoumeh Soltani

Scientific position: Assistant Professor

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Education:

- Ph. D. in Structural Engineering, K.N. Toosi University of Technology, Tehran, Iran, 2014

Thesis: Linear and non-linear stability analysis of thin-walled beams with variable cross section

- M. Sc. in Structural Engineering, K.N. Toosi University of Technology, Tehran, Iran, 2009

Thesis: Determination of buckling loads and vibration frequencies of non-prismatic members using power series method

- B. Sc. in Civil Engineering, K.N. Toosi University of Technology, Tehran, Iran, 2007

Publications:

- ### *Journal Papers*

1- Asgarian, B. and Soltani, M., 2011. Lateral-Torsional Buckling of Non-Prismatic Thin-Walled Beams with Non-Symmetric Cross Section. Procedia Engineering, 14, pp.1653-1664.

2- Asgarian, B., Soltani, M. and Mohri, F., 2013. Lateral-torsional buckling of tapered thin-walled beams with arbitrary cross-sections. Thin-walled structures, 62, pp.96-108.

3- Soltani, M., Asgarian, B. and Mohri, F., 2014. Elastic instability and free vibration analyses of tapered thin-walled beams by the power series method. Journal of constructional steel research, 96, pp.106-126.

4- Soltani, M., Asgarian, B. and Mohri, F., 2014. Finite element method for stability and free vibration analyses of non-prismatic thin-walled beams. Thin-Walled Structures, 82, pp.245-261.

5- Soltani, M., Poshtdar, M. and Asgarian, B., 2015. Stability Analysis of Cold-Formed Steel Rafters Subjected to Bending and Varying Axial Loads. Journal of Structure & Steel, 1394 (18), pp.75-90. (in Persian)

6- Soltani, M. and Mohri, F., 2016. Stability and vibration analyses of tapered columns resting on one or two-parameter elastic foundations. Journal of Numerical Methods in Civil Engineering, 1(2), pp.57-66.

7- Soltani, M. and Sistani, A., 2017. Elastic stability of columns with variable flexural rigidity under arbitrary axial load using the finite difference method. Journal of Numerical Methods in Civil Engineering, 1(4), pp.23-31.

8- Soltani, M., 2017. Vibration characteristics of axially loaded tapered Timoshenko beams made of functionally graded materials by the power series method. Journal of Numerical Methods in Civil Engineering, 2(1), pp.1-14.

9- Soltani, M. and Asgarian, B., 2018. Determination of Lateral-Torsional Buckling Load of Simply Supported Prismatic Thin-Walled Beams with Mono-Symmetric Cross-Sections Using the Finite Difference Method. Amirkabir Journal of Civil Engineering, 50(1), pp.61-72. (in Persian)

10- Soltani, M. and Mohammadi, M., 2018. Stability Analysis of Non-Local Euler-Bernoulli Beam with Exponentially Varying Cross-Section Resting on Winkler-Pasternak Foundation. Journal of Numerical Methods in Civil Engineering, 2(3), pp.67-77.

11- Soltani, M. and Asgarian, B., 2018. Buckling analysis of axially functionally graded columns with exponentially varying cross-section. Modares civil engineering journal, 18(3), pp.87-99. (in Persian)

12- Soltani, M., Asil Gharebaghi, S. and Mohri, F., 2018. Lateral stability analysis of steel tapered thin-walled beams under various boundary conditions. Journal of Numerical Methods in Civil Engineering, 3(1), pp.13-25.

13- Soltani, M. and Gholamizadeh, F., 2018. Size-dependent buckling analysis of non-prismatic Timoshenko nanobeams made of FGMs rested on Winkler foundation. Journal of Numerical Methods in Civil Engineering, 3(2), pp.35-46.

14- Soltani, M. and Asgarian, B., 2019. Finite element formulation for linear stability analysis of axially functionally graded nonprismatic Timoshenko beam. International Journal of Structural Stability and dynamics, 19(02), p.1950002.

15- Soltani, M., Asgarian, B. and Jafari Deligani, V., 2019. Elastic instability and free vibration analyses of axially functionally graded Timoshenko beams with variable cross-section. Journal of Structural and Construction Engineering, (): -. doi: 10.22065/jsce.2019.143692.1627. (in Persian)

16- Soltani, M. and Asgarian, B., 2019. New hybrid approach for free vibration and stability analyses of axially functionally graded Euler-Bernoulli beams with variable cross-section resting on uniform Winkler-Pasternak foundation. Latin American Journal of Solids and Structures, 16(3).

17- Soltani, M., Sistani, A., Asgarian, B., 2019. Stability Analysis of Non-prismatic Columns Using the Combination of Power Series Method and McLaurin Expansion. Journal of Structure & Steel, 1397 (24), pp.29-40. (in Persian)

18- Soltani, M. and Asgarian, B., 2019. Stability and Free Vibration Analyses of Non-prismatic Columns using the Combination of Power Series Expansions and Galerkin's Method. Amirkabir Journal of Civil Engineering, 50(6), pp.1017-1032. (in Persian)

19- Soltani, M., Asgarian, B. and Jafarzadeh, F., 2019. Finite difference method for buckling analysis of tapered Timoshenko beam made of functionally graded material. AUT Journal of Civil Engineering, DOI: 10.22060/AJCE.2019.15195.5525.

20- Soltani, M., Asgarian, B. and Mohri, F., 2019. Improved Finite Element Model for Lateral Stability Analysis of Axially Functionally Graded Nonprismatic I-beams. International Journal of Structural Stability and Dynamics, 19(09), p.1950108.

21- Soltani, M., Mohammadi, M. and Asgarian, B., 2019. Effect of Winkler elastic foundation on free vibration of tapered beam based on non-local elasticity theory. Journal of Structural and Construction Engineering, (): -. doi: 10.22065/jsce.2019.176357.1807. (in Persian)

22- Soltani, M. and Asgarian, B., 2020. Lateral-Torsional Stability Analysis of a Simply Supported Axially Functionally Graded Beam with a Tapered I-Section. Mechanics of Composite Materials, pp.1-16.

23- Soltani, M., 2020. Flexural-torsional stability of sandwich tapered I-beams with a functionally graded porous core. International Journal of Numerical Methods in Civil Engineering, 4(3), pp.8-20.

24- Soltani, M., 2020. Finite Element Modelling for Buckling Analysis of Tapered Axially Functionally Graded Timoshenko Beam on Elastic Foundation. Mechanics of Advanced Composite Structures, 7(2), pp. 203-218.

25- Soltani, M. and Asgarian, B., 2021. Exact stiffness matrices for lateral–torsional buckling of doubly symmetric tapered beams with axially varying material properties. Iranian Journal of Science and Technology, Transactions of Civil Engineering, 45(2), pp.589-609.

26- Soltani, M., Atoufi, F., Mohri, F., Dimitri, R. and Tornabene, F., 2021. Nonlocal elasticity theory for lateral stability analysis of tapered thin-walled nanobeams with axially varying materials. Thin-Walled Structures, 159, p.107268.

27- Soltani, M., Atoufi, F., Mohri, F., Dimitri, R. and Tornabene, F., 2021. Nonlocal Analysis of the Flexural–Torsional Stability for FG Tapered Thin-Walled Beam-Columns. Nanomaterials, 11(8), p.1936.

28- Soltani, M. and Soltani, A., 2021. An analytical solution for stability analysis of unrestrained tapered thin-walled FML profile. Journal of Numerical Methods in Civil Engineering, 6(1), pp.50-62. (in Persian)

29- Soltani, M. and Ahanian, A., 2021. Free vibration and flexural-torsional stability analyses of axially functionally graded tapered thin-walled beam resting on elastic foundation. Amirkabir Journal of Mechanical Engineering, 53(6), pp.10-10. (in Persian)

30- Soltani, M. and Soltani, A., 2021. Lateral stability analysis of thin-walled fiber-metal laminate beam with varying cross-section by considering nonlinear strains. Amirkabir Journal of Mechanical Engineering, 53(10), pp. 13-13.

31- Soltani, M., Sajjadi-nejad, F. and Ghasemi, A.R., 2021. Lateral buckling analysis of axially functionally graded thin-walled beam with varying cross-section under different boundary conditions. Journal of Structural and Construction Engineering, (), pp. -. doi: 10.22065/jsce.2021.214758.2041. (in Persian)

32- Soltani, M., 2022. A Novel Approach for Lateral Buckling Assessment of Double Tapered Thin-Walled Laminated Composite I-Beams. Mechanics of Advanced Composite Structures, 9(1), pp. 11-23.

33- Soltani, M. and Atoufi, F. 2022. Non-local Finite Element Formulation for Stability Analysis of Thin-Walled Nanobeams with Varying I-section. Acta Mechanica, doi: 10.1007/s00707-021-03126-x.

- *Conference Papers*

1- Asgarian, B. and Soltani, M. Stability analysis of non-prismatic columns. Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2009), Jun, 2009, Rhodes, Greece.

2- Asgarian, B. and Soltani, M. Vibration and stability analysis of non-prismatic Timoshenko beams on elastic foundation. Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2009), Jun, 2009, Rhodes, Greece.

3- Asgarian, B. and Soltani, M. Lateral-torsional buckling of non-prismatic thin-walled beams with non-symmetric cross-section. Twelfth East Asia-Pacific Conference on Structural Engineering and Construction (EASEC-12), January, 2011, Hong Kong, China.

4- Soltani, M., Asgarian, B. and Mohri, F. Finite element method for stability and vibration analyses of thin-walled beams with arbitrary cross-section. Advances in Structural Engineering and Mechanics (ASEM13), 8-12 September, 2013, Jeju, Korea.

5- Soltani, M., Asgarian, B. and Mohri, F. Finite element method for stability analysis of tapered thin-walled beams under lateral loads. Advances in Structural Engineering and Mechanics (ASEM13), 8-12 September, 2013, Jeju, Korea.

6- Asgarian, B., Poshtdar, M., Soltani, M. Analysis of cold-formed steel rafters subjected to bending and varying axial loads. 5th Conference of Steel & Structure, February, 2015, Tehran, Iran. (in Persian)

7- Soltani, M., Sistani, A. and Asgarian, B. Finite difference method for stability analysis of columns with non-uniform cross-section. 6th Conference of Steel & Structure, December, 2015, Tehran, Iran. (in Persian)

8- Soltani, M. and Asgarian, B. Stability analysis of thin-walled beam with singly-symmetric cross-section under lateral load using the Rayleigh-Ritz method. 6th National Conference on Steel & Structure, 7-9 December, 2015, Tehran, Iran. (in Persian)

9- Soltani, M., Sistani, A. and Asgarian, B. Free vibration analysis of beams with variable flexural rigidity resting on one or two parameter elastic foundations using finite difference method. The 2016 Structures Congress, August 28- September 1, 2016, Jeju, Korea.

10- Soltani, M., Asgarian, B. and Sistani, A. Elastic instability of non-prismatic Timoshenko beams by the power series method. The 2016 Structures Congress, August 28- September 1, 2016, Jeju, Korea.

11- Soltani, M., Asgarian, B. and Hadavand khani, A.R. Upheaval buckling analysis of subsea pipeline by considering the effect of seabed friction using the power series method. ICOPMAS 2016, 31 Oct- 2 Nov, 2016, Tehran, Iran.

12- Soltani, M. and Jafari Deligani, V. Finite difference method for free vibration analysis of functionally graded Timoshenko beam. 4th National Conference on Applied Research in Civil Engineering, Architecture and Urban Management, January, 2017, Tehran, Iran. (in Persian)

13- Soltani, M., Jafari Deligani, V. and Asgarian, B. Determination of buckling load of Timoshenko beam made of FGMs under tangential compressive load. 4th National Conference on Applied Research in Civil Engineering, Architecture and Urban Management, January, 2017, Tehran, Iran. (in Persian)

14- Soltani, M. and Mozaffari Bidgoli, V. Linear stability analysis of tapered thin-walled beams via SAP2000. 10th National Congress on Civil Engineering, 19-20 April, 2017, Tehran, Iran. (in Persian)

15 Soltani, M., Jahangiri, F. and Asgarian, B. Lateral-torsional buckling analysis of simply supported beam with doubly-symmetric cross-section using the Rayleigh-Ritz method. 10th National Congress on Civil Engineering, 19-20 April, 2017, Tehran, Iran. (in Persian)

16- Soltani, M., Blouri Kashani, A.H. and Asgarian, B. Stability analysis of prismatic Timoshenko beam using central finite difference method. 10th National Congress on Civil Engineering, 19-20April, 2017, Tehran, Iran. (in Persian)

17- Soltani, M. and Mohammadi, M. Investigation the effect of thermal load on natural frequency of non-local Euler-Bernoulli beam using the finite difference method. 8th National Conference of Steel & Structure, 30-31 January, 2018, Tehran, Iran. (in Persian)

18- Soltani, M. and Mohammadi, M. Stability analysis of non-prismatic Euler-Bernoulli beam considering non-local effects. 8th National Conference of Steel & Structure, 30-31 January, 2018, Tehran, Iran. (in Persian)

19- Soltani, M. and Mohammadi, M. Thermal buckling analysis of non-local Euler-Bernoulli prismatic beam using the power series method. 11th International Congress on Civil Engineering, 8-10 May, 2018, Tehran, Iran. (in Persian)

20- Jafarzadeh, F. and Soltani, M. Investigation the effect of Winkler foundation on natural frequency of Euler-Bernoulli beam with varying cross-section. 6th National Conference on Applied Research in Civil Engineering, Architecture and Urban Management, Jun, 2019, Tehran, Iran. (in Persian)

21- Jafarzadeh, F. and Soltani, M. Stability analysis of non-uniform Euler-Bernoulli beam made of FGMs. 6th National Conference on Applied Research in Civil Engineering, Architecture and Urban Management, Jun, 2019, Tehran, Iran. (in Persian)

22- Soltani, M. and Mohammadi, M. Free vibration analysis of nonlocal Euler-Bernoulli beam with varying cross-section under thermal loading. 6th National Conference on Applied Research in Civil Engineering, Architecture and Urban Management, Jun, 2019, Tehran, Iran. (in Persian)

Honors-Awards:

- Research Excellence Award, University of Kashan, 2019.
- Research Excellence Award, University of Kashan, 2021.

Research Projects:

- **Pars Oil& Gas Company:**
  Experimental study of structural health monitoring system for Offshore Platforms.
  Analysis the subsea pipelines under thermal and internal pressure.

- **Yademan Sazeh Company:**
  Design of structural health monitoring system for Milad Telecommunication tower.

- **Research Center of Ministry of Highways, Iran:**
  Vulnerability assessment and retrofitting of buried bridges on Parandak-Qom railway.

Thesis Supervised:

1- Numerical analysis of deformation mechanisms in sea bed buried pipelines, Ali Aghnami, 2017.

2- Evaluating the moment-gradient factor (C_b) for steel beams with compact cross-sections, Tabarak Karim, 2018.

3- Nonlinear analysis of hybrid Polypropylene-Steel fiber reinforced concrete beams, Anghreed Alfars, 2018.

4- Analysis of axially functionally graded non-prismatic beams resting on Winkler-Pasternak elastic foundation based on nonlocal Euler-Bonoulli beam theory, Masoumeh Mohammadi, 2019.

5- Stability and free vibration analyses of axially functionally graded tapered thin-walled beam resting on elastic foundation, Ali Ahanian, 2019.

6- Stability analysis of axially functionally graded non-prismatic thin-walled beams based on Eringen's nonlocal theory, Farzaneh Atoufi, 2020.

7- Analysis of rectangular footing on Geocell Reinforced multi-layered soils under static loads, Samira Khashei, 2020.

8- Buckling analysis of sandwich thin-walled beams with arbitrary cross-section under different boundary conditions, Azadeh Soltani, 2021.

Research Interests:

- Linear and non-linear analyses of thin-walled beam
- Stability and vibration analyses of structures
- Design of steel structures
- Mechanics of composite materials
- Numerical and energy methods
- Analysis of subsea pipelines

Courses Taught:

- ### *Undergraduate*
- Statics [F15, S16, S17, S18, S19, F19, S20, S21]
- Mechanics of Materials I [F15, S16, F16, F17]
- Mechanics of Materials II [S16, S18, S20]
- Dynamics [F15, F16, F19, F21]
- Design of Steel Structures I [S16, S17, F18, F20]
- Design of Steel Structures II [F15, F16, F17, S19, S21]

- ### *Graduate*
- Finite Element Method [F16, F17, F18, F19, F20, F21]
- Stability of Structures [S16, S17, S18, S19, S20, S21]