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# SUMMARY OF ACTIVITIES IN BUCKLING AND NONLINEAR BEHAVIOR OF STEEL MEMBERS AND STRUCTURES

#### FUNDED RESEARCH PROJECTS

• "Flexural-torsional buckling of homogeneous or composite bars with constant or varying cross-section of arbitrary shape", Pythagoras program funded by the Greek Secretariat of Research and Technology, Ass. Prof. E. Sapountzakis as P.I. (2004-2006).

#### SUPERVISION OF DOCTORAL THESES

• Giorgos Mageirou (Feb. 2011), "Contribution to the Design of Multi-Story Steel Frames against Flexural Buckling".

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## JOURNAL PUBLICATIONS

• Livanou, M.A. and Gantes, C.J., "Assessing the Necessity to Account for Geometric Nonlinearity in von Mises Trusses Representing Simple Shallow Roofs", *Journal of the International Association for Shell and Spatial Structures (IASS Journal)*, Vol. 57, No. 4, n. 190, pp. 261-266, December 2016.

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Margariti, G. and Gantes, C.J., "Linear and Nonlinear Buckling Response and Imperfection Sensitivity
of Cable-Stayed Masts and Pylons", Structural Engineering International, Vol. 25, Number 1, pp. 4349, Feb. 2015.

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 Margariti, G. and Gantes, C.J., "Critical Buckling Load and Nonlinear Post-Buckling Response of Guyed Towers", Journal of the International Association for Shell and Spatial Structures (IASS Journal), Vol. 55, No. 4, n. 182, pp. 229-235, December 2014.

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• Gantes, C.J., Livanou, M.A. and Avraam, T.P., "New Insight into Interaction of Buckling Modes with Stable Post-Buckling Response", *Arabian Journal for Science and Engineering*, Vol. 39, Issue 12, pp. 8559-8572, December 2014.

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- Mageirou, G.E. and Gantes, C.J., "Buckling Strength of Multi-Story Sway, Non-Sway and Partially-Sway Frames with Semi-Rigid Connections", *Journal of Constructional Steel Research*, Vol. 62, Issue 9, pp. 893-905, September 2006.
  - doi: http://dx.doi.org/10.1016/j.jcsr.2005.11.019
- Gantes, C.J. and Mageirou, G.E., "Improved Stiffness Distribution Factors for Evaluation of Effective Buckling Lengths in Multi-Story Sway Frames", *Engineering Structures*, Vol. 27, Issue 7, pp. 1113-1124, June 2005.
  - doi: http://dx.doi.org/10.1016/j.engstruct.2005.02.009
- Gantes, C.J., "Design Strategies for Controlling Structural Instabilities", *International Journal of Space Structures*, Vol. 15, Nos. 3&4, pp. 167-188, December 2000.
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#### **CONFERENCE PUBLICATIONS**

- Livanou, M.A., Katsidoniotaki, M., Gantes, C.J. and Avraam, T.P., "Analytical and Numerical Investigation of Flexural Buckling of Members in Double-Pitched Plane Steel Frames", 9<sup>th</sup> Hellenic National Conference on Steel Structures, Larissa, Greece, 5-7 Oct. 2017 (in Greek with English summary).
- Livanou, M.A. and Gantes, C.J., "Assessing the Necessity to Account for Geometric Nonlinearity in von Mises Trusses Representing Simple Shallow Roofs", *International Association for Shell and Spatial Structures (IASS) Symposium 2016*, Tokyo, Japan, 26-30 September 2016.
- Livanou, M.A. and Gantes, C.J., "Interaction of Inelastic Global and Local Buckling in Steel Bars under Compression", 8<sup>th</sup> Greek National Steel Structures Conference, Tripoli, 2-4 Oct. 2014 (in Greek with English summary).
- Livanou, M.A. and Gantes, C.J., "Investigation of Interaction between Global and Local Buckling in Rods Subjected to Compression", *IASS-SLTE 2014 Symposium*, Brasilia, Brazil, Sep. 15-19, 2014.
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- Livanou, M.A., Gantes, C.J. and Avraam, T.P., "Revisiting the Problem of Buckling Mode Interaction in 2-DOF Models and Built-up Columns", *International Association for Shell and Spatial Structures* (IASS) Symposium 2013 "Beyond the Limits of Man", J.B. Obrębski and R. Tarczewski (eds.), Wroclaw University of Technology, Poland, Sep. 23-27, 2013.
- Mageirou, G.E., and Gantes, C.J., "Evaluation of Critical Buckling Load of Semi-Rigid Steel Frames -An Alternative Approach", ICSAS'07 (6<sup>th</sup> International Conference on Steel & Aluminium Structures), Oxford, U.K., 24-27 July 2007, edited by R.G. Beale, pp. 907-914.
- Mageirou, G.E., Gantes, C.J., Markou, K.P., and, Bouras, C.G. "A Unified Criterion for the Importance of 2nd Order effects and Buckling Sway Ability in Steel Frames", 5<sup>th</sup> Greek National Steel Structures Conference, Xanthi, 29 Sep.-2 Oct. 2005, E. Galousis, I. Ermopoulos, Ch. Calfas Eds., Vol. I, pp. 441-448 (in Greek with English summary).
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- Mageirou, G.E. and Gantes, C.J., "Rotational Stiffness Coefficients for Evaluation of Critical Buckling Loads in Multi-Story Sway, Non-Sway and Partially Sway Frames", 5<sup>th</sup> International Ph.D. Symposium in Civil Engineering, Delft, The Netherlands, 16-19 June, 2004, edited by J. Walraven, J. Blaauwendraad, T. Scarpas and B. Snijder, Taylor & Francis, pp. 1433-1440.

- Gantes, C.J., Panagiotou, M. and Fragkopoulos, T., "Influence of Initial Imperfections for the Design
  of Buckling-Prone Structures", ICES'03: International Conference on Computational & Experimental
  Engineering and Sciences, Corfu, Greece, July 25-29, 2003, edited by S.N. Atluri, D.E. Beskos and D.
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- Gantes, C.J. and Voyagaki, E., "Effective Column Lengths of Plane Frames with Elastic Lateral Supports", *EuroSteel 2002*, 3<sup>rd</sup> *European Conference on Steel Structures*, Coimbra, Portugal, Sept. 19-20, 2002, edited by A. Lamas and L. Simões da Silva, Vol. 1, pp. 163-172.
- Chatzifoti, A.P., Mageirou, G.E. and Gantes, C.J., "Comparison of Elastoplastic Analysis Methods for Steel Frames", 4<sup>th</sup> Greek Association on Computational Mechanics (GRACM) Congress, Patra, Greece, June 27-29, 2002.
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