

# **CURRICULUM VITAE**

**SURNAME:** Markolefas

**FIRST NAME:** Stilianos (Stylianos)

**PROFESSION:** Assistant Professor, *Dept. of Mechanical Engineering, Central Greece University of Applied Sciences*

**MECHANICAL - STRUCTURAL ENGINEER  
STRESS ANALYST  
FINITE ELEMENT ANALYST**

## **1. FIELDS OF EXPERTISE**

- Structural Engineering
- Stress Analysis – Hand Calculations
- Finite Element Analysis
- P-version of the Finite Element Method
- Finite Element Code development
- Space Frame and Truss Analysis via computer and hand calculations
- Stress Analysis of Adhesively Bonded Joints
- Fatigue assessment – HCF – Damage Tolerance – Inspection Intervals
- Acoustic Fatigue (Airbus methods for metallic and composite panels)
- Modal Analysis
- Computational Mechanics
- Steel Structures
- Strength of Materials - Mechanics of Materials
- Continuum Mechanics
- Machine Elements

## **2. PERSONAL INFORMATION - COMMUNICATION**

- **Place of birth:** Meligala, Messenia, Greece, 1966
- **Age:** 51
- **Nationality:** Greek
- **Marital status:** Married (father of two children)
- **Military service:** Sergeant of Corps of Engineers, Greek Army (1993-1994)
- **Address:** 5 Trias Str., Ilioupolis, Greece 16346
- **Mobile phone:** 0030-6977-285726 (Greek)
- **e-mail:** [markos34@gmail.com](mailto:markos34@gmail.com)

## **3. PROFESSIONAL EXPERIENCE**

- **3.1 Assistant Professor** (*Dept. of Mechanical Engineering, Central Greece University of Applied Sciences*)  
(2014 – today)  
Mechanics of Materials  
Strength of Materials  
Finite Element Method  
Fracture Mechanics  
Fatigue and Damage Tolerance  
Dynamics and Vibrations  
Vehicle Dynamics  
Vehicle Structural Analysis

- **3.2 Stress Engineer** (*Sogeclair Aerospace, Eurocopter (Airbus Helicopters), Germany*)  
(2012 - 2014)  
Structural Repair Manual for A350XWB Pax Doors  
Fatigue Type Certification Reports for Metallic structural elements  
Airbus Fatigue Index method (AFI – IQF)  
Acoustic Fatigue Analysis of Door Skin Composite Panels  
Preparation of Fatigue Test specifications for CFRP coupon tests  
Bracket analysis using Nastran – Patran FEM programs
- **3.3 Freelance Structural Engineer**  
(1995 - 2011)  
Finite Element analysis  
Stress analysis and dimensioning of large structures  
Steel Structures, Thin Plate and Shell Structures, Bridges, Load Bearing Walls  
Grid and Cable Structures  
Sizing of structural components (beams, panels, ribs, struts, bolts, rivets)
- **3.4 Permanent Technical Associate, Technical Consultant Group Ltd**  
(1996 – 1998)  
Participation in the *Finite Element analysis* and the *final (or detailed) structural design* of various engineering projects.
- **3.5 Consulting Engineer, Software for Structural Engineers, Sofistik Hellas Ltd** (1995)  
**Testing** and **validation** of the Company's *Finite Element Software*. Technical support and consulting on the capabilities of the program (Static and Dynamic analysis, Plastic analysis, Creep, Large Deformations, etc).
- **3.6 Research Engineer (Contractor), Rensselaer Polytechnic Institute, Troy, New York, USA**  
(1992 - 1993)  
**Development of novel computational techniques** in the framework of Research Programs supported by *NASA Langley* and *Lockheed Missiles and Space Company* (Mesh Superposition Finite element method, p-version, s-version).

#### **4. PARTICIPATION IN RESEARCH PROGRAMS**

- **4.1** Participation in the Research program *Archimedes* (Technological Educational Institute of Piraeus, 2004, 2005, ΕΠΕΑΚ II): *Study of the behaviour of Piezoelectric Materials*.
- **4.2** Participation in the Research program *Archimedes* (Technological Educational Institute of Athens, 2004, 2005, ΕΠΕΑΚ II): *Composite Patch Repair of metallic structures with embodiment of fiber optics*.
- **4.3** Participation in Research program *Pythagoras II* (School of Applied Mathematical and Physical Sciences, NTUA): *Application of the Gradient Elasticity theory for the solution of boundary value problems, using analytical methods and mixed adaptive finite element methods*.
- **4.4** Participation in Research program *Archimedes III* (Technological Educational Institute of Athens, 2011 - 2014): *Hydroelastic response of Very Large Floating Structures in 3D Bathymetry*

#### **5. COMPUTER SKILLS**

(Computer Languages, Computer Software)

- **5.1** Working experience with programs *Microsoft Word* και *Excel*
- **5.2** Very good knowledge of the programming language *FORTRAN*.

- **5.3** Excellent knowledge of the professional structural engineering finite element package **SOFISTIK**.
- **5.4** Working experience with finite element package **PATRAN/NASTRAN**.
- **5.5** Working experience with Airbus stress analysis tool **ISAMI**

## **6. LANGUAGES: English - Fluently**

## **7. EDUCATION**

- **7.1 Doctor of Engineering**

(April 2004) *Department of Applied Mechanics, School of Applied Mathematical and Physical Sciences, National Technical University of Athens (NTUA)*

**Thesis Subject:** “*Mathematical Analysis, Error Estimation, Pollution Estimation and Adaptive Techniques for the h- and p- versions of the Finite Element Method for general Elliptic problems*”

**Thesis Advisor:** Professor George Tsamasphyros, NTUA, Athens, Greece

- **7.2 Master of Science in Computational Mechanics**

(December 1999) *Interdisciplinary Program of Graduate Studies, National Technical University of Athens, Grade Point Average (GPA): 9.86 / 10.0*

- **7.3 Master of Science in Structural Engineering**

(May 1992) *Civil Engineering Department, Rensselaer Polytechnic Institute (R.P.I), Troy, New York, GPA: 4.0 / 4.0*

- **7.4 Diploma in Mechanical Engineering**

(March 1989), *Mechanical Engineering Department, University of Patras - Greece*  
GPA: 8.14 / 10

## **8. TEACHING EXPERIENCE (Undergraduate and Graduate levels)**

- **8.1 Assistant Professor** (*Mechanical Engineering Dept., Central Greece University of Applied Sciences, 2014-today*)

Teaching the following **undergraduate level** courses:

- ***Statics***
- ***Strength of Materials***
- ***Dynamics – Vibrations***
- ***Fracture Mechanics – Fatigue and Damage Tolerance***
- ***Structural Analysis – Finite Element Method***
- ***Metallic Structures – Steel Structures***

Teaching the following **graduate level** courses in the framework of the M.Sc Program “***Design and Manufacturing of Sports Vehicle Systems***”:

- ***Vehicle Dynamics Analysis***
- ***Basic and Advanced Vehicle Materials***
- ***Vehicle Structural Design***

- **8.2 Lecturer under contract** (*School of Applied Mathematical and Physical Sciences, National Technical University of Athens, 2005-2009*)

Teaching of the following undergraduate level courses:

- ***Mathematical Simulation in Mechanics (Calculus of variations)***
- ***Computational Mechanics I, II (Finite Element Method)***

- **8.3 Assistant Professor under contract** (*Faculty of Technological Applications (FTA), Technological Educational Institute of Athens (TEIA), 2004-2010*)  
Teaching of the following undergraduate level courses:
  - **Mechanics I (Statics)** (1<sup>st</sup> Semester, **Dept. of Shipbuilding Technology**)
  - **Mechanics II (Strength of Materials)** (2<sup>nd</sup> Semester, **Dept. of Shipbuilding Technology**)
  - **Machine Elements** (3<sup>rd</sup> Semester, **Dept. of Shipbuilding Technology**)
  - **Machine Technology & Tribology** (4<sup>th</sup> Semester, **Dept. of Energy Technology**)
  - **Solution of Engineering Problems via Numerical Analysis (Finite Element Method)** (4<sup>th</sup> Semester, **Dept. of Civil Works and Infrastructure Technology**)
  - **Computer Applications of Statics** (Laboratory, 5<sup>th</sup> Semester, **Dept. of Civil Works and Infrastructure Technology**)
  - **Fracture Mechanics** (6<sup>th</sup> Semester, **Dept. of Civil Works and Infrastructure Technology**)
- **8.4 Participation in the Interdisciplinary Program of Graduate Studies** “**Computational Mechanics**” (National Technical University of Athens, 1998-2010)  
Teaching of the following graduate level courses:
  - **Error Estimation and Adaptive Techniques in the Finite Element Method**
  - **Finite Element Method I (Computational Mechanics I)**

## **9. JOURNAL PUBLICATIONS (REFEREED JOURNAL ARTICLES)**

**9.1. S. Markolefas**, V.Kostopoulos and S. A. Paipetis, "Non-linear analysis of a metal-to-composite scarf joint", Int. J. Mech. Sci. 33(12) (1991) 961-973

**9.2. J. Fish and S. Markolefas**, "The s-version of the finite element method for multilayer laminates", International Journal for Numerical Methods in Engineering 33(5) (1992) 1081-1105

**9.3. J. Fish and S. Markolefas**, "Adaptive s-method for linear Elastostatics", Computer Methods in Applied Mechanics and Engineering 104 (1993) 363-396

**9.4. J. Fish and S. Markolefas**, "Adaptive global-local refinement strategy based on the interior error estimates of the h-method", International Journal for Numerical Methods in Engineering 37 (1994) 827-838

**9.5. J. Fish, S. Markolefas, R. Guttal and P. Nayak**, "On adaptive multilevel superposition of finite element meshes for linear Elastostatics", Applied Numerical Mathematics 14 (1994) 135-164

**9.6. G. Tsamasphyros and S. Markolefas**, "An estimate of the Babuska-Brezzi inf-sup discrete stability constant for general linear Petrov-Galerkin finite element formulations", Applied Mathematics and Computation 144 (2003) 107-116

**9.7. G. Tsamasphyros and S. Markolefas**, "Integration pointwise pollution error estimates in the finite element method in one dimension", Applied Numerical Mathematics 51 (2004) 345-360

**9.8. G. Tsamasphyros and S. Markolefas**, "Some a priori error estimates with respect to  $H^\theta$  norms,  $0 < \theta < 1$ , for the h-extension of the finite element method in two dimensions", Applied Numerical Mathematics 52 (2005) 449-458

**9.9. S.I. Markolefas, D.A. Tsouvalas, G.I. Tsamasphyros** "Theoretical analysis of a class of mixed,  $C^0$  continuity formulations for general dipolar Gradient Elasticity boundary value problems", International Journal of Solids and Structures 44 (2007) 546-572

**9.10. G.I. Tsamasphyros, S. Markolefas, D.A. Tsouvalas**, "Convergence and performance of the h- and p- extensions with mixed finite element  $C^0$ -continuity formulations for tension and buckling of a gradient elastic beam", International Journal of Solids and Structures 44 (2007) 5056-5074

**9.11. S. Markolefas**, "Standard Galerkin formulation with high order Lagrange finite elements for Option Markets pricing", Applied Mathematics and Computation 195 (2008) 707-720

**9.12. S. I. Markolefas**, D. A. Tsouvalas and G. I. Tsamasphyros, "Some  $C^0$ -continuous mixed formulations for general dipolar linear Gradient Elasticity boundary value problems and the associated energy theorems", International Journal of Solids and Structures 45 (2008) 3255-3281

**9.13. G. J. Tsamasphyros**, Th. K. Papathanassiou and **S. I. Markolefas** "Some analytical solutions of the Kamal equation for isothermal curing with applications to Composite patch repair", Journal of Engineering Materials and Technology 131 (2008) 011008.1-011008.7

**9.14. S. I. Markolefas**, D. A. Tsouvalas and G. I. Tsamasphyros, "Mixed finite element formulation for the general anti-plane shear problem, including Mode III crack computations, in the framework of dipolar linear gradient elasticity", Computational Mechanics 43 (2009) 715-730

**9.15. S. I. Markolefas** and Th. K. Papathanassiou "Stress redistributions in adhesively bonded double-lap joints, with elastic-perfectly plastic adhesive behavior, subjected to axial lap-shear cyclic loading", International Journal of Adhesion & Adhesives 29 (2009) 737-744

**9.16. S. P. Filopoulos**, T. K. Papathanassiou, **S. I. Markolefas**, G. J. Tsamasphyros "Dynamic finite element analysis of a gradient elastic bar with micro inertia", Computational Mechanics 45 (2010) 311-319

**9.17. Papathanassiou, T.K., Markolefas, S.I., Filopoulos, S.P., Tsamasphyros, G.J.** "Heat transfer in thin multilayered plates-part I: A new approach", Journal of Heat Transfer 133 (2011) Article number 021302, DOI: 10.1115/1.4002630

**9.18. Papathanassiou, T.K., Markolefas, S.I., Filopoulos, S.P., Tsamasphyros, G.J.** "Heat transfer in thin multilayered plates-part II: Applications to the composite patch repair technique", Journal of Heat Transfer 133 (2011) Article number 021303, DOI: 10.1115/1.4002631

**9.19. S. P. Filopoulos**, T. K. Papathanassiou, **S. I. Markolefas**, G. J. Tsamasphyros, "Generalized Thermoelastic Models for Linear Elastic Materials with Micro-Structure Part I: Enhanced Green-Lindsay Model", Journal of Thermal Stresses 37 (2014) 624-641

**9.20. S. P. Filopoulos**, T. K. Papathanassiou, **S. I. Markolefas**, G. J. Tsamasphyros, "Generalized Thermoelastic Models for Linear Elastic Materials with Micro-Structure Part II: Enhanced Lord-Shulman Model", Journal of Thermal Stresses 37 (2014) 642-659

**9.21. K. A. Belibassakis**, G. A. Athanassoulis, T. K. Papathanassiou, S. P. Filopoulos, **S. I. Markolefas**, "Acoustic wave propagation in inhomogeneous, layered waveguides based on modal expansions and hp-FEM", Wave Motion 51 (2014) 1021-1043

**9.22. D.M. Manias**, T.K. Papathanassiou, **S.I. Markolefas** and E.E. Theotokoglou, "Analysis of a gradient-elastic beam on Winkler foundation and applications to nano-structure modelling", European Journal of Mechanics A/Solids 56 (2016) 45-58

## **10. PROCEEDINGS PAPERS**

**10.1. J. Fish** and **S. Markolefas**, "Adaptive s-method for linear Elastostatics", proceedings of the AIAA 33<sup>rd</sup> Structures, Structural Dynamics & Materials Conference, Dallas, TX, (1992) 313-317

**10.2. G. I. Tsamasphyros**, **S. Markolefas** and D. A. Tsouvalas, "Convergence & performance of the h- and p- extensions with mixed finite element  $C^0$  continuity formulations, for tension & buckling of a strain gradient elastic beam", proceedings of the International Conference on Computational and Experimental Engineering and Sciences (ICCES), Chennai, Rep. of India, December 1 – 6 (2005)

**10.3. G. I. Tsamasphyros**, **S. Markolefas** and D. A. Tsouvalas, "Convergence analysis and comparison of the h- and p- extensions with mixed finite element  $C^0$  continuity formulations, for some types of one dimensional biharmonic equations", proceedings of the 5<sup>th</sup> GRACM International Congress on Computational Mechanics, Limassol, Cyprus, June 29 – July 1 (2005) 853-860

**10.4. S. I. Markolefas**, D. Tsouvalas and G. Tsamasphyros, "*High polynomial order mixed finite element methods for strain gradient elasticity problems: A posteriori error estimation and Adaptivity*", proceedings of the 3<sup>rd</sup> International Conference "From Scientific Computing to Computational Engineering", Athens, Greece, 9-12 July (2008)

**10.5. G. Tsamasphyros, S. Markolefas**, D. Tsouvalas and S.P. Filopoulos, "*Energy theorems in the framework of the Strain Gradient Elasticity*", proceedings of the 4<sup>th</sup> IASME/WSEAS International Conference on Continuum Mechanics, Cambridge, UK, 2009, 24-26 Feb 2009

**10.6. T. K. Papathanasiou, S.P. Filopoulos, S.I. Markolefas** and G. J. Tsamasphyros, "*Existence and Uniqueness results for a variational problem of thermal stresses in a gradient elastic half-space*", proceedings of the 4<sup>th</sup> IASME/WSEAS International Conference on Continuum Mechanics, Cambridge, UK, 24-26 Feb 2009

**10.7. S.P. Filopoulos, S.I. Markolefas**, T. K. Papathanasiou and G. J. Tsamasphyros, "*Finite element models for generalized coupled thermoelastic problems with micro inertia*", proceedings of the 9<sup>th</sup> International Conference on Bioengineering, Patras, Greece, Sept. 2009

**10.8 T. K. Papathanasiou, S. I. Markolefas**, S. P. Filopoulos, K. Kalkanis, A. Savaidis and G. J. Tsamasphyros, "*Temperature and Degree of Cure Profiles in Composite Patch Bonded Repairs of Cracked Plates*", proceedings of the 2<sup>nd</sup> International Conference of Engineering Against Fracture (ICEAF II), Mykonos, Greece, June 22-24, 2011

**10.9 K. A. Belibassakis, G. A. Athanassoulis, T. K. Papathanasiou, S. I. Markolefas** and Tr. Kokkinos, "*A Coupled-Mode System for shear deformable beams and plates of non-uniform thickness*", proceedings of the 10<sup>th</sup> HSTAM International Congress on Mechanics, Chania, Crete, Greece, May 25-27, 2013

**10.10 A. E. Karperaki, K. A. Belibassakis, T. K. Papathanasiou and S. I. Markolefas**, "*Higher-Order FEM for nonlinear hydroelastic analysis of a floating elastic strip in shallow-water conditions*", proceedings of the VI International Conference on Computational Methods for Coupled Problems in Science and Engineering COUPLED PROBLEMS, B. Schrefler, E. Onate and M. Papadrakakis (Eds), Venice, Italy, May 18-20, 2015

## **11. REFERENCES**

- **George Tsamasphyros**, Professor, Faculty of Applied Mathematics and Physics, National Technical University of Athens, Greece  
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