Recent Developments in Boundary Element Methods

A volume to honour
John T. Katsikadelis

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Dedicated to John Katsikadelis
and his family

Contents

Editorial

The task of preparing a volume to honor Professor Katsikadelis on the occasion of his 72nd birthday was for me a great challenge and honor. This volume is a small tribute to the man who guided me into academics and who has been a supervisor and a friend to me for the last 28 years. This task indirectly brought me back to 1982, when I first met the professor of the course in Dynamic Analysis of Structures, J.T. Katsikadelis, Lecturer at that time at the Institute of Structural Analysis and Aseismic Research of the National Technical University of Athens. His assistance in my efforts to achieve a deeper understanding of the subject of Dynamic Analysis of Structures and his rigorous scientific training were the sparks that ignited our collaboration for the next 25 years. Writing my diploma thesis in 1984 and my doctoral dissertation in 1986-1990 under his supervision were the best opportunity for years of guidance along the paths of research, where Professor Katsikadelis's indisputable qualities of rectitude, consistency, tenacity, patience, untiring effort and strict discipline were to become principles for my later academic evolution, and his scientific sobriety constituted a challenge of the path I had just embarked upon. But also after 1996 when I was first elected Lecturer at the School of Civil Engineering at the NTUA, his continuing advice and encouragement were of invaluable assistance as I took my first academic steps.

The boundary element community is well aware of many outstanding contributions by Prof. Katsikadelis to the areas of linear and nonlinear, static and dynamic analysis of structures (beams, plates, shells, membranes, cables), shape optimization of structures, stability of structures, response to nonconservative loads, flutter instability, inverse problems, numerical solution of fractional differential equations and study of the response of structures under fractional type inertia and damping forces, and viscoelastic response of structures, just to mention a few. One of his important contributions to computational mechanics is the introduction of the Concept of the Analog Equation, which combined with integral techniques has given the AEM and the MAEM, two methods that render the BEM and the RBFs Meshless Methods efficient and versatile computational tools for solving problems in engineering, mechanics and mathematical physics described by difficult and complicated equations. From his research work have emerged 2 doctoral dissertations, more than 220 original technical articles published in reputable international journals and conference proceedings. He is the author of 14 books

and 7 invited chapters and original papers in books, while the English version of his book “Boundary Elements: Theory and Applications” (Elsevier 2002) has been translated in Japanese (2004), Russian (2007) and will also appear in Serbian soon. He is also the editor of 7 conference proceedings and guest editor of 5 special issues of international journals. He has received numerous prestigious honors and distinctions, both national and international. On May 25, 2009 he was elected Doctor Honoris Causa (Honorary Doctor) of the University of Nis, Serbia "for his exceptional contribution to the advancement of scientific thought, improvement of science, technics and technology”, which is the highest position a foreign professor can hold in Serbia.

The book comprises 26 contributions by more that 60 leading researchers in Boundary Element Methods (BEM) and other Mesh Reduction Methods (MRM). All contributors are well-known scientists from all over the world. The volume, besides a review chapter by Professor Brebbia on the career and the scientific work of Professor Katsikadelis, is essentially a collection of original articles covering a variety of research topics in the areas of solid mechanics, fluid mechanics, potential theory, inhomogeneous or composite materials, fracture mechanics, damage mechanics, plasticity, heat transfer, dynamics and vibrations, soil-structure interaction. The chapters contained in this volume appear in alphabetical order by first author and most of them are relevant to and reflect the research interests of Professor Katsikadelis.

In closing, I would like to take this opportunity to express my sincere thanks to the authors who have contributed to this volume for their prompt cooperation and their willingness to respond to my requests. Moreover, I am indebted to the Senate and the School of Civil Engineering of the National Technical University of Athens and to the Attiko Metro S.A. for their support to publish this book.

I should like to express my sincere gratitude and best wishes for many more creative, productive and enjoyable years, full of health, prosperity and happiness to Professor J.T. Katsikadelis and I am sure that I am conveying the sentiments of all contributors to this volume, as well as of his former students and colleagues.

Evangelos J. Sapountzakis,
2010

Biography of John Katsikadelis

John (Ioannis) T. Katsikadelis was born in Piraeus, Greece on December 15, 1937. He attended the elite Ionidios model high school of Piraeus. After graduation he participated in the nation-wide entrance examinations separately for: (1) The School of Civil Engineering of the National Technical University of Athens ranking third among all the candidates for the year 1957. (2) The School of Chemistry of the University of Athens ranking first among all the candidates for that year and (3) The School of Mathematics of the University of Athens ranking among the first of all the candidates for that year.

He attended the School of Civil Engineering (1957-1962) and received the degree of Diploma Civil Engineer in 1962. In 1970, after 8 years of intense professional activity as licensed civil engineer, he jointed the chair of Structural Analysis at the School of Civil Engineering as research and teaching assistant and after completing his doctoral work he received the degree of Doctor Engineer of NTUA in 1973.

In 1974 he was awarded a scholarship by the Polytechnic University of New York, where he continued his graduate studies in the Department of Applied Mechanics of the School of Aerospace. These studies ended with an MSc degree

and a new PhD in the field of Applied Mechanics (majored in continuum mechanics, applied mathematics and advanced dynamics). During the 1972 and 1973 he attended courses of his interest at the School of Mathematics of the University of Athens. He has also attended CISM courses on Finite Elements and Boundary Elements at Udine in 1983 and 1986. Besides Greek, he knows, English, German and French. His hobbies are skiing, mountain hiking and cycling.

Personal information

Married to Paraskevi- Eftychia Katsikadeli born Buyuka. He has one daughter Christina Katsikadeli, married to Stefan Nussbaumer, and a granddaughter Katharina-Felicia Nussbaumer.

Address

Institute of Structural Analysis and Aseismic Research, School of Civil Engineering, National Technical University of Athens (NTUA), Zografou Campus, Athens 15773, Greece. E-mail: jkats@central.ntua.gr. Website: http://users.ntua.gr/jkats

Academic career and positions held

1970-1982	Scientific Assistant and Senior Lecturer of Structural Analysis at the School of Civil Engineering, NTUA.
1982-2004	Assistant Professor, Associate Professor and Full Professor of Structural Analysis at the School of Civil Engineering, NTUA.
2004-	Emeritus Professor. He teaches graduate courses at the School of Civil Engineering, NTUA.
1976-2008	Professor of Structural Analysis at the School of Engineers of the Hellenic Army.
1988-1990 & 1993-1995	Head of the Structural Engineering Department of NTUA.
1984-2004	Director of the Institute of Structural Analysis and Aseismic Research of NTUA.
1989-1992	Director of the Earthquake Planning and Protection Organization of Greece (EPPO).
1989-1992	Director of European Center on Prevention and Forecasting of Earthquake (ECPFE) of the Council of Europe.

1989-1992	Permanent Correspondent of Greece in the Open Partial Agreement (OPA) of the Council of Europe for the "*Protection Against and Relief of Major Natural and Technological Disasters"*.
1991-1992	Representative of Greece in the Permanent Network of National Correspondents for Civil Protection of EU.

As the Director of ECPFE, EPPO, and Permanent Correspondent in OPA he took the initiative and worked for the establishment of the *European Code of Ethics* for scientists in the case of Earthquake Predictions and the *European Advisory and Evaluation Committee for Earthquake Predictions*. He has also been used by EU as an expert in topics of Civil Protection and Seismic Hazard Research.

Professional Activities

Registered professional civil engineer in Greece. Experience in the design and construction of concrete and steel projects.

Teaching Experience

He has taught over 14 different courses in Structural Analysis and Applied Mechanics at undergraduate and graduate level. Among them Statically Determinate and Indeterminate Structures, Matrix Structural Analysis, Theory of Plates, Theory of Shells, Plane Elasticity and Analysis of Shear Walls, Boundary Elements, Dynamics of Structures, Advanced Structural Dynamics, Continuum Mechanics, Theory of Elasticity and Elastodynamics, Buckling of Beams, Plates and Shells. He introduced, developed and updated several courses at Structural Department. In the beginning of 90's, he introduced the BEM at the School of Civil Engineering as formal undergraduate and graduate course.

Honours

Doctor Honoris Causa of the University of Nis, Serbia. Elected on May 25, 2009.

Member of the *European Academy of Sciences and Arts,* 2009.

Member of the *International Academy of Engineering,* 2010.

President of the *Hellenic Society of Theoretical and Applied Mechanic*s (HSTAM), 2007-2010.

President of the *Greek Association for Computational Mechanics* (GRACM), affiliated to IACM (*International Association for Computational Mechanics*), 1997-2000 (twice elected).

Honorary member of the *Serbian Society of Mechanics* (2007).

Fellow of the *Wessex Institute*, UK (for "*his outstanding contribution to the development of the Boundary Elements"*).

General Secretary of the *Office of Theoretical and Applied Mechanics of the Academy of Athens.*

Award plaque *honoris causa* by the General Staff of the Hellenic Army for "*his ten year contribution as a professor to the School of Engineers"*, 1986.

Award plaque *honoris causa* by the General Staff of the Hellenic Army "*for his contribution as a professor to the School of Engineers"* in Special ceremony on the occasion of his retirement, February 18, 2009.

Member of the ECCOMAS Committee on *Computational and Applied Mathematics.*

Thomaidio Award (2008) of NTUA for the paper: A BEM Based Meshless Variational Method for Solving Linear and Nonlinear Plate Problems. *Proc. of First Serbian (26th YU) Congress on Theoretical and Applied Mechanics*, Kopaonik, Serbia, April 10-13, 2007, pp. 463-474.

Award plaque of the Hellenic Army on the 180th Anniversary Commemoration of the establishment of the Corps of Engineers for "*his contribution as a professor to the School of Engineers"*, 18 November 2009.

Distinctions

Editorial board member of:
Engineering Analysis with Boundary Elements
Technica Chronica
Boundary Element Communications
Facta Universitatis of the University of Nis, Series Architecture and Civil Engineering
The Open Mechanics Journal
International Journal for Engineering Analysis and Design
Journal of the Serbian Society for Computational Mechanics

Editorial board member of the international Series: *Boundary Element Series*, Computational Mechanics Publications, *WIT Transactions on Modelling and Simulation*, WIT press

Guest editor of the special issues of the Journals:

Engineering Analysis with Boundary Elements, Special Issue on Plates, Vol 17 (2), pp. 91-181, 1996,

Engineering Analysis with Boundary Elements, Special Issue on Nonlinear BEM, Vol 23, (5-6), pp. 363-525, 1999.

Engineering Analysis with Boundary Elements, Special Issue on BEM/MRM for inhomogeneous Solids, Vol. 32 (12), pp. 995-174 (2008).

A*rchive of Applied Mechanics*, Special Issue on the 5th German-Greek-Polish Symposium on Advances on Mechanics, Vol. 74(11-12) pp. 729-898 (2005).

Archive of Applied Mechanics, Special Issue on the 6th German-Greek-Polish Symposium on Advances on Mechanics, (Vol. 79(6-7), pp. 479-677, (2009).

Fulbright Research Scholar for One-Year Visit as Postdoctoral Research Fellow at the Polytechnic University Of New York (1974-75).

Chairman or Co-chairman of the Conferences and Symposia: *He has acted as chairman or co-chairman of many conferences and symposia.*

PhD Thesis advisor after invitation of the King Mongut's University of Technology Bangkok, Thailand.

Member of the "P.S. Theocaris" Foundation, Treasurer, (2005-2007).

Founding Member of the ESDEP (*European Steel Design Programme*) and Member of WG 8

Member of the *Technical Council of the Academy of Athens* (2000-present).

Member of the Executive Council of *Institute of Engineering Seismology and Earthquake Engineering* (ITSAK) (1989-1992).

Member of the international committee of the Council of Europe for the preparation of the *European Code of Ethics in Earthquake Prediction* (1990-91).

Member of the EU Committee of specialists for the *Multilingual Lexicon of Civil Protection* (1991).

Member of the General Council of the *International Association for Computational Mechanics* (IACM).

Member of the *General Assembly of IUTAM* and *Representative of HSTAM in IUTAM*.

Societies

Member of the *Hellenic Society for Theoretical and Applied Mechanics* (HSTAM), affiliated to IUTAM, Treasurer (1986-2000), Vice President (2000-2007) and President 2007-2010.

Member of the *Greek Association for Computational Mechanics* (GRACM), affiliated to IACM. President 1997-2000. Founding member and member of the Administrative Council until present.

Fellow of the Wessex Institute, UK.

Honorary Member of the *Serbian Society of Mechanics* 2007.

Founding Member of the *International Society for Computational Engineering and Sciences* (ISCES),

Member of the Steering *Committee* of *International Society of Boundary Elements* (ISBE).

Member of the *New York Academy of Sciences.*

Member of the *Greek Society for Earthquake Engineering*.
Founding Member of the *Hellenic Society for Steel Structures Research.*
Member of the *Technical Chamber* of Greece.
Member of the *Greek Society of Civil Engineers*.
Member of the *American Society of Civil Engineers* (ASCE).
Member of *Alumni Association of the Poly* (Polytechnic University of New York).
Member of the Scientific Research Society *Sigma Xi*

Other scientific activities

He has participated in 76 national and international conferences and symposia, where he has presented over 125 papers. He has organized as chairman, co-chairman or member of organizing committee 21 international conferences and symposia and he has acted as a member of scientific advisory committee of 43 international conferences. He has also chaired many sessions. He has reviewed papers for many international journals and he has been a member of the editorial board of international journals and book series. He has given 12 distinguished and keynote plenary lectures as well as many invited lectures at international conferences and universities abroad.

Research work

He maintains research interests in Computational Mechanics, especially in the area of boundary element methods (BEM) as it is applied to linear and non linear analysis of structures under static and dynamic loads (beams, plates, shells, membranes and general 2D and 3D inhomogeneous anisotropic bodies). The response of structures to nonconservative loads as well as shape optimization of beams and plate thickness and inverse problems are also included in his research interests. He has introduced the *Concept of the Analog Equation* and developed the Analog Equation Method (AEM), which in conjunction with integral techniques renders the BEM a powerful and versatile computational tool for solving complicated linear and non linear ordinary and partial differential equations describing the realistic response of physical systems. The AEM was extended to meshless methods as MAEM, a method that circumvents the drawbacks of the classical multi-quadric radial basis functions method. He recently used the AEM to develop a numerical solution for linear and non linear ordinary and partial differential equations providing thus an efficient computational tool for the analysis of structures under visco-inertia forces such as viscoelastic response of membranes, plates, wave-diffusion equation in inhomogeneous anisotropic viscoelastic bodies described with fractional derivative models. Given below is a detailed account of his published work.

Thesis research activity and doctoral students

1. EJ Sapountzakis, "Contribution to the Solution of Static and Dynamic Behavior of Plates Using the Boundary Element Method", NTUA, 1991; Present Position: Associate Professor, School of Civil Engineering, NTUA.
2. MS Nerantzaki, "Nonlinear Analysis of Plates by the Boundary Element Method", NTUA, 1992; Present Position: Assistant Professor, School of Civil Engineering, NTUA.
3. FT Kokkinos, "Three-Dimensional Layerwise Modeling of Layered Media with Boundary Integral Equations", Virginia Polytechnic Institute and State University, USA, 1995; Present Position: Assistant Professor, Department of Civil and Infrastructure Engineering, Technological Educational Institute of Athens, Greece
4. CB Kandilas "Solving the Finite Elasticity Problem by the Analog Equation Method. Application to two-dimensional Problems", NTUA, 2000; Present Position: Department of Applied Mechanics and Marine Materials, Hellenic Naval Academy, Greece.
5. AJ Yiotis, "Nonlinear Static and Dynamic Analysis of General Shells Using the Analog Equation Method", NTUA, 2003; Present Position: Research Associate, Institute of Structural Analysis and Aseismic Research, School of Civil Engineering, NTUA; Civil Engineer in the Region of Peloponnese Greece.
6. GC Tsiatas, G.C. "Nonlinear Analysis of Space Membranes by the Boundary Element Method", NTUA, 2003; Present Position: Assistant Professor, Department of Civil Engineering, Technological and Educational Institute of Piraeus, Greece; Research Associate, Institute of Structural Analysis and Aseismic Research, School of Civil Engineering, NTUA; Public Servant in the Hellenic Ministry of Infrastructure, Transport and Network.
7. B Chinnaboon, "A BEM-based Meshless Method for Plates on Biparametric Elastic Foundation with Internal Supports", King Mongut's University of Technology, Bangkok, Thailand, 2008; Present Position: Post-Doctoral Fellowship, King Mongkut's University of Technology, Bangkok, Thailand
8. N Babouskos, "Linear and Nonlinear Thickness Optimization Problems of Elastic and Viscoelastic Plates", NTUA, in progress.

Supervisor of numerous Diploma and MSc theses, co-advisor and member of the examination committees of many PhD theses at the National Technical University of Athens. Two of the supervised theses won the first and second "*award for the best thesis*" nationwide in Greece.

Publication record

His publication record includes 14 books, 5 guest edited journal special issues (3 of Engineering Analysis with Boundary Elements and 2 of Archive of Applied Mechanics), 7 invited chapters and original papers in books, 7 edited Conference Proceedings, 2 Doctoral Dissertations and 217 original papers in the most reputed international journals and international conference proceedings. His text

book on the BEM (Elsevier 2002) has been translated into Japanese (Asakura, Tokyo 2004) and Russian (Publishing House of Russian Civil Engineering Universities, Moscow 2007). A translation in Serbian will be soon published. 191 of his 217 publications are devoted to BEM and in general to integral equation methods as well as to other mesh reduction methods. His published work has received over 850 citations.

Books

(a) Published by Greek publishing Companies and NTUA (in Greek)

1. Katsikadelis, JT and Nerantzaki, MS, "Matrix Structural Analysis", NTUA, 1993.
2. Katsikadelis, JT, "Theory of Elasticity and Shear Walls", (177 pages), NTUA, 1977.
3. Katsikadelis, JT, "Structural Dynamics", NTUA, 1985.
4. Katsikadelis, JT, "Theory of Plates", NTUA, 1987.
5. Katsikadelis, JT, "Dynamic Analysis of Multi-story Buildings", NTUA, 1990.
6. Katsikadelis, JT, "Advanced Structural Dynamics", NTUA, 1999.
7. Katsikadelis, JT, "Boundary Elements", (344 pages), Symeon Publications, 1999.
8. Katsikadelis, JT, "Dynamics of Structures", Vol. I, (384 pages), Symmetria Publications, 2002.
9. Katsikadelis, JT, "Dynamics of Structures", Vol. II, (528 pages), Symmetria Publications, 2004.
10. Katsikadelis, JT, "Boundary Elements. Vol. II. Analysis of Plates", (108 pages), NTUA, 2009.

(b) Published by International Publishing Companies

11. Katsikadelis, JT, "Boundary Elements: Theory and Applications", Elsevier, London, 2002.
12. .カチカデーリス Ｊ.Ｔ．著 (2004), 境界要素法—基本と応用 原書名 Asakura, Tokyo, Japan, 2004. (Translation in Japanese of "Boundary Elements: Theory and Applications", Elsevier, 2002),
13. Кацикаделис Дж. Т. (2007) "Граничные элементы. Теория и приложения,", Publishing House of Russian Civil Engineering Universities, Moscow, 2007. (Translation in Russian of ""Boundary Elements: Theory and Applications, Elsevier, 2002)
14. Katsikadelis, Dž. T. (2010), *Graničkі Elementi. Teorija I Primene,* (to appear. (Translation in Serbian of *"Boundary Elements: Theory and Applications*", Elsevier, 2002),

Editor of conference proceedings

1. Aravas, N and Katsikadelis, JT "Proceedings of the 3rd National Congress on Computational Mechanics", Vol. I & Vol. II, University of Thessaly Press, Volos, Greece, 1999.
2. Katsikadelis, JT, Beskos, DE and Gdoutos, EE, "Recent Advances in Applied Mechanics", Honorary Volume for Prof. A.N. Kounadis, Athens Greece. Symmetria Press, 2000.
3. Beskos, DE, Katsikadelis, JT, Manolis, GD and Brebbia, CA, "Boundary Elements XXIII". Advances in Boundary Elements Series, WIT Press, Southampton, 2001.
4. Brebbia, CA and Katsikadelis JT, **"**Boundary Elements and Other Mesh Reduction Methods XXVIII**",** WIT Press, Southampton, 2006.
5. Bazeos, N, Karabalis, DL, Polyzos, D, Beskos, DE and Katsikadelis JT, "Proceedings of 8th International Congress on Mechanics of HSTAM", Greece, 2007.
6. Katsikadelis, JT, "Recent Advances in Mechanics", Proceedings of the 6th German-Greek-Polish Symposium, September 17-21, Alexandroupolis, Greece, 2007.
7. Atanackovic, TM and Katsikadelis, JT, "Recent Advances in Mechanics", Proceedings of the 3rd Serbian-Greek Symposium, September 15-17*,* Novisad, Serbia, 2008.

Invited chapters and original papers in books

1. Katsikadelis, JT and Vayas, I, "Unstiffened plates", ESDEP Lecture No 4, WG 8, Plates and Shells, 1990.
2. Katsikadelis, JT, Sedlacek, G and Ungermann, D, "Basis Introduction to Plate Behavior", ESDEP, Lecture No 1WG 8, Plates and Shells, 1990.
3. Katsikadelis, J.T, "Special Methods for Plate Analysis". In: *"*Boundary Element Analysis for Plates and Shells", (ed. DE Beskos), pp. 221-311, Springer-Verlag, Berlin, 1991.
4. Katsikadelis JT, "A New Time Step Integration Scheme for Structural Dynamics Based on the Analog Equation Method". In: "Collection of Papers Dedicated to Prof. P.S. Theocaris", pp. 80-100, National Technical University of Athens, 1994.
5. Nerantzaki, MS and Katsikadelis, JT, "Analysis of Plates with Variable Thickness. An Analog Equation Solution". In: "Plate Bending Analysis with Boundary Elements" (ed. F. Aliabadi), Chapt. 9, pp. 275-308, Computational Mechanic Publications, 1998.
6. Kokkinos, FT. and Katsikadelis, JT, "Three-Dimensional Analysis of Thick In-fill Walls under Unilateral Interface Conditions by a Pure Boundary Method". In: "Scientific Publications of the Greek Military Academy", Vol. 2, pp. 261–281, 2003.

7. Katsikadelis, JT, "The Fractional Wave-Diffusion Equation in Bounded Inhomogeneous Anisotropic Media. An AEM solution". In: "Advances in Boundary Element Methods: A Volume to Honor Professor Dimitri Beskos", (eds. GD Manolis and D. Polyzos), pp. 255-276, Springer Science, Dordrecht, Netherlands, 2008.

Doctoral dissertations

1. Katsikadelis, JT, "A Method for Evaluation of the Plane Stress Components in the Interior of Thin Plates from Given Boundary Stresses Obtained Experimentally", Dissertation for the Degree of Doctor Engineer, NTUA, Athens, 1973.
2. Katsikadelis, JT, "The Analysis of Plates on Elastic Foundation by the Boundary Integral Equation Method", Dissertation in partial fulfilment for the Degree of Doctor of Philosophy (PhD) in Applied Mechanics at the Polytechnic University of New York, New York, 1982.

Publications in international journals

1. Kounadis, AN and Katsikadelis, JT, "Shear and Rotatory Inertia Effect on Beck's Column", Journal of Sound and Vibration, **49** (2), pp. 171-178, 1976.
2. Katsikadelis, JT, Massalas, CV and Tzivanidis, GI, "An Integral Equation Solution of the Plane Problem of the Theory of Elasticity", Mechanics Research Communication, **4** (3), pp. 199-208, 1977.
3. Katsikadelis J.T, "Application of the Rate Equations to the Buckling Problem of Circular Cylindrical Shells" Technica Chronica, **1**, pp. 53-59, 1978.
4. Massalas, CV, Tzivanidis, GI and Katsikadelis, JT, "Buckling of a Continuous Beam Resting on a Tensionless Elastic Foundation", Journal of Franklin Institute, **306** (6), pp. 449-455, 1978.
5. Kounadis, AN and Katsikadelis, JT, "Bifurcational Buckling Analysis of a Box-shaped Structure", Scientific Papers of the Faculty of Civil Engineering, NTUA, **2** (3), pp. 1-23, 1978.
6. Kounadis, AN and Katsikadelis, JT, (1979) "Coupling Effects on a Cantilever Subjected to a Follower Force", Journal of Sound and Vibration, **62**, pp. 131-139, 1979.
7. Kounadis, AN and Katsikadelis, JT, "On the Discontinuity of the Flutter Load for Various Types of Cantilevers", International Journal of Solids and Structures, **16** (4), pp. 375-383, 1980.
8. Yotis, AJ, Katsikadelis, JT and Kounadis, AN, "Stability Analysis of Box-Shaped Structures of Rectangular Cross-Section", Revue Roumaine des Sciences Techniques. Serie Mecanique Appliquee, **27** (6), pp. 681-695, 1982.

9. Katsikadelis, JT and Armenakas, AE, "Numerical Evaluation of Double Integrals with a Logarithmic or Cauchy-Type Singularity", Journal of Applied Mechanics, Transactions ASME, **50** (3), pp. 682-684, 1983.
10. Katsikadelis, JT and Kounadis, AN, "Flutter Loads of a Timoshenko Beam-Column under a Follower Force Governed by two Variants of Equations of Motion". *Acta Mechanica*, **48** (3-4), pp.209-217, 1983.
11. Katsikadelis, JT and Armenakas, AE, "Analysis of Clamped Plates on Elastic Foundation by the Boundary Integral Equation Method", Journal of Applied Mechanics, Transactions ASME, **51**, pp. 547-580, 1984.
12. Katsikadelis, JT and Armenakas, AE, "Plates on Elastic Foundation by the BIE Method", ASCE, Journal of Engineering Mechanics, **110** (7), pp. 1086-1105, 1984.
13. Massalas, CV, Tzivanidis, GI and Katsikadelis, JT, "Degeneracy in Plates Subjected to Elastic Constraints", Revue Roumaine des Sciences Techniques. Serie Mecanique Appliquee, **30** (6), pp. 635-639, 1985.
14. Katsikadelis, JT and Armenakas, AE, "Numerical Evaluation of Line Integrals with a Logarithmic Singularity", AIAA Journal, **23** (7), pp. 1135-1137, 1985.
15. Katsikadelis, JT and Sapountzakis, EJ, "Torsion of Composite Bars by the boundary Element Method. ASCE", Journal of Engineering Mechanics, **111** (9), pp.1197-1210, 1985.
16. Katsikadelis, JT, "Propagation of Elastic Waves in Plates with Laminated Periodic Structure", Scientific Papers of the Faculty of Civil Engineering, NTUA, **7** (4), 1983.
17. Katsikadelis, JT and Kallivokas, L, "Clamped Plates on Pasternak-type Elastic Foundation by the Boundary Element Method", Journal of Applied . Mechanics, Transactions ASME, **53** (4), pp. 909-917, 1986.
18. Katsikadelis, JT and Kokkinos, FT, "Static and Dynamic Analysis of Composite Shear Walls by the Boundary Element Method", Acta Mechanica, **68** (3-4), pp. 231-250, 1987
19. Katsikadelis, JT and Sapountzakis, EJ, "An Approach to the Vibration Problem of Homogeneous, Non-homogeneous and Composite Membranes Based on the Boundary Element Method", International Journal for Numerical Methods in Engineering, **26** (11), pp. 2439-2455, 1988.
20. Katsikadelis, JT and Kallivokas, L, "Plates on Biparametric Elastic Foundation by BDIE Method", ASCE Journal of Engineering Mechanics, **114** (5), pp. 847-875, 1988.
21. Nerantzaki, MS and Katsikadelis, JT, "A Green's Function Method for Nonlinear Analysis of Plates", Acta Mechanica, **75** (1-4), pp. 211-225, 1988.

22. Katsikadelis, JT and Armenakas, AE, “A New Boundary Equation Solution to the Plate Problem”, Journal of Applied Mechanics, Transactions ASME, **56**, pp. 364-374, 1989.
23. Katsikadelis, JT, Sapountzakis, EJ and Zorba, EG, “A BEM Approach to Static and Dynamic Analysis of Plates with Internal Supports”, Computational Mechanics, **7** (1), pp. 31-40, 1990.
24. Katsikadelis, JT and Kandilas, CB, “A Flexibility Matrix Solution of the Vibration Problem of Plates Based on the Boundary Element Method”, Acta Mechanica, **83** (1-2), pp 51-60, 1990.
25. Katsikadelis, JT, “A Boundary Element Solution to the Vibration Problem of Plates”, Journal of Sound and Vibration, **141**(2), pp. 313-322, 1990.
26. Katsikadelis, JT and Sapountzakis, EJ, “A BEM Solution to Dynamic Analysis of Plates with Variable Thickness”, Computational Mechanics, **7** (5-6), pp. 369-379, 1991.
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