

## **CURRICULUM VITAE**

**Surname:** Kalantonis  
**Name:** Vassilis  
**Date of Birth:** June 9, 1974  
**Place of Birth:** Koroni, Greece  
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### **EDUCATION**

- ✓ B.Sc. in Mathematics, Department of Mathematics, University of Patras, Greece (1998).
- ✓ M.Sc. in Computational Mathematics and Decision Making, Department of Mathematics and Department of Computer Engineering and Informatics, University of Patras, Greece (2001).
- ✓ Ph.D. in Celestial Mechanics, Department of Engineering Sciences, University of Patras (2004).

### **ACADEMIC POSITIONS HELD**

- ✓ March 2006 – May 2011: Lecturer, Department of Engineering Sciences, University of Patras, Greece.
- ✓ May 2011 – August 2013: Assistant Professor, Department of Engineering Sciences, University of Patras, Greece.
- ✓ August 2013 – March 2021: Assistant Professor, Department of Electrical and Computer Engineering, University of Patras, Greece.
- ✓ March 2021 – : Associate Professor, Department of Electrical and Computer Engineering, University of Patras, Greece.

### **RESEARCH ACTIVITIES**

His research has received over 270 citations and is focused in the following fields: Celestial Mechanics, Nonlinear Dynamical Systems in Molecular Physics, Continuous and Discrete Dynamical Systems in Economy, Stability and Bifurcation Theory, Electric and magnetic activity of the brain.

He is serving as reviewer in the following international scientific journals:

Advances in Astronomy, Advances in Space Research, Aerospace Science and Technology, Applied Mathematics and Computation, Archive of Applied Mechanics, Astronomische Nachrichten, Astrophysics and Space Science, British Journal of Mathematics & Computer Science, Chaos, Solitons & Fractals, Few-Body Systems, Indian Journal of Mathematics (IJM), International Frontier Science Letters, International Journal of Astronomy and Astrophysics, International Journal of Bifurcation and Chaos, International Journal of Non-Linear Mechanics, Journal of Astrophysics, Journal of Gravity, Journal of Mathematics, Open Physics, Physics Letters A, Symmetry, The Astronomical Journal, The Journal of the Astronautical Sciences, Universe.

### **RESEARCH PROGRAMS**

He was scientific coordinator of a “K. Karatheodory” research program of the University of Patras (2007-2010).

### **TEACHING EXPERIENCE**

Since 2005 he has taught courses of Applied Mathematics, Computer Programming as well as Laboratories in Numerical Analysis in several Departments of the Engineering School.

### **PUBLICATIONS**

#### **Journal publications**

- J1.** Kalantonis, V.S., Perdios, E.A., Perdiou, A.E. and Vrahatis, M.N.: 2001, Computing with Certainty Individual Members of Families of Periodic Orbits of a Given Period, *Celestial Mechanics and Dynamical Astronomy*, 80, 81-96.
- J2.** Vrahatis, M.N., Perdiou, A.E., Kalantonis, V.S., Perdios, E.A., Papadakis, K., Prosmiiti, R. and Farantos, S.C.: 2001, Application of the Characteristic Bisection Method for Locating and Computing Periodic Orbits in Molecular Systems, *Computer Physics Communications*, 138, 53-68.
- J3.** Ragos, O., Perdios, E.A., Kalantonis, V.S., and Vrahatis, M.N.: 2001, On the Equilibrium Points of the Relativistic Restricted Three-Body Problem, *Nonlinear Analysis*, 47, 3413-3418.

- J4.** Perdios, E.A., Kalantonis, V.S. and Vrahatis, M.N.: 2002, Efficient Method for Computing with Certainty Periodic Orbits on a Surface of Section, *Celestial Mechanics and Dynamical Astronomy*, 84, 231-244.
- J5.** Perdiou, A.E., Kalantonis, V.S., Perdios, E.A. and Vrahatis, M.N.: 2002, Application of Efficient Composite Methods for Computing with Certainty Periodic Orbits in Molecular Systems, *Computer Physics Communications*, 148, 227-235.
- J6.** Perdios, E.A. and Kalantonis, V.S.: 2002, Symmetric Doubly Asymptotic Orbits at Collinear Equilibrium Points in the General Three-Body Problem, *Astronomy and Astrophysics*, 394, 323-328.
- J7.** Kalantonis, V.S., Perdios, E.A., Perdiou, A.E., Ragos, O. and Vrahatis, M.N.: 2003, On the Application of Optimization Methods to the Determination of Members of Families of Periodic Solutions, *Astrophysics and Space Science*, 288, 581-590.
- J8.** Kalantonis, V.S., Perdios, E.A., Perdiou, A.E., Ragos, O. and Vrahatis, M.N.: 2003, Deflation Techniques for the Determination of Periodic Solutions of a Certain Period, *Astrophysics and Space Science*, 288, 591-599.
- J9.** Kalantonis, V.S., Markellos, V.V. and Perdios, E.A.: 2005, Computing Periodic Orbits of the Three-Body Problem: Effective Convergence of Newton's Method on the Surface of Section, *Astrophysics and Space Science*, 298, 441-451.
- J10.** Kalantonis, V.S., Perdios, E.A. and Ragos, O.: 2006, Asymptotic and Periodic Orbits Around  $L_3$  in the Photogravitational Restricted Three-Body Problem, *Astrophysics and Space Science*, 301, 157-165.
- J11.** Kalantonis, V.S., Douskos, C.N. and Perdios, E.A.: 2006, Numerical Determination of Homoclinic and Heteroclinic Orbits at Collinear Equilibria in the Restricted Three-Body Problem with Oblateness, *Celestial Mechanics and Dynamical Astronomy*, 94, 135-153.
- J12.** Perdios, E.A. and Kalantonis V.S.: 2006, Critical Periodic Orbits in the Restricted Three-Body Problem with Oblateness, *Astrophysics and Space Science*, 305, 331-336.

- J13.** Douskos, C., Kalantonis, V., Markellos, P.: 2007, Effects of Resonances on the Stability of Retrograde Satellites, *Astrophysics and Space Science*, 310, 245-249.
- J14.** Perdios, E.A., Kalantonis, V.S., Douskos, C.N.: 2008 Straight-line Oscillations Generating Three-Dimensional Motions in the Photogravitational Restricted Three-Body Problem, *Astrophysics and Space Science*, 314, 199-208.
- J15.** Kalantonis, V.S., Perdios, E.A. and Perdiou, A.E.: 2008, The Sitnikov Family and the Associated Families of 3D Periodic Orbits in the Photogravitational RTBP with Oblateness, *Astrophysics and Space Science*, 315, 323-334.
- J16.** Toichiro Asada, Christos Douskos, Vassilis Kalantonis, and Panagiotis Markellos: 2010, Numerical Exploration of Kaldorian Interregional Macrodynamics: Enhanced Stability and Predominance of Period Doubling under Flexible Exchange Rates, *Discrete Dynamics in Nature and Society*, Volume 2010, Article ID 263041, 29 pages.
- J17.** Douskos, C., Kalantonis, V., Markellos, P. and Perdios, E.: 2012, On Sitnikov-like Motions Generating New Kinds of 3D Periodic Orbits in the R3BP with Prolate Primaries, *Astrophysics and Space Science*, 337, 99-106.
- J18.** T. Asada, V. Kalantonis, M. Markakis, and P. Markellos: 2012, Analytical Expressions of Periodic Disequilibrium Fluctuations Generated by Hopf Bifurcations in Economic Dynamics, *Applied Mathematics and Computation*, 218, 7066-7077.
- J19.** Perdios, E.A. and Kalantonis V.S.: 2012, Self-Resonant Bifurcations of the Sitnikov Family and the Appearance of 3D Isolas in the Restricted Three-Body Problem, *Celestial Mechanics and Dynamical Astronomy*, 113, 377-386.
- J20.** Perdiou, A.E., Perdios, E.A. and Kalantonis, V.S.: 2012, Periodic Orbits of the Hill Problem with Radiation and Oblateness, *Astrophysics and Space Science*, 342, 19-30.
- J21.** Perdios, E.A., Kalantonis, V.S., Perdiou, A.E. and Nikaki, A.A.: 2015, Equilibrium Points and Related Periodic Motions in the Restricted Three-Body Problem with Angular Velocity and Radiation Effects, *Advances in Astronomy*, vol. 2015, Article ID 473483, 21 pages.
- J22.** Elshaboury, S.M., Abouelmagd, E.I., Kalantonis, V.S. and Perdios, E.A.: 2016, The Planar Restricted Three-Body Problem when both Primaries are

Triaxial Rigid Bodies: Equilibrium Points and Periodic Orbits, *Astrophysics and Space Science*, 361:315, 18 pages.

- J23.** Singh, J., Kalantonis, V.S., Gyegwe, J.M. and Perdiou, A.E.: 2016, Periodic Motions Around the Collinear Equilibrium Points of the R3BP where the Primary is a Triaxial Rigid Body and the Secondary is an Oblate Spheroid, *The Astrophysical Journal Supplement Series*, 227:13, 14 pages.
- J24.** Singh, J., Perdiou, A.E., Gyegwe, J.M. and Kalantonis, V.S.: 2017, Periodic Orbits around the Collinear Equilibrium Points for Binary Sirius, Procyon, Luhman 16,  $\alpha$ -Centuari and Luyten 726-8 Systems: The Spatial Case, *Journal of Physics Communications*, 1, 025008, 13 pages.
- J25.** Zotos, E.E., Perdiou, A.E. and Kalantonis, V.S.: 2019, Numerical Investigation for the Dynamics of the Planar Circular Pluto-Charon System, *Planetary and Space Science*, 179, 104718, 15 pages.
- J26.** Kalantonis, V.S.: 2020, Numerical Investigation for Periodic Orbits in the Hill Three-Body Problem, *Universe*, 6, 72, 17 pages.
- J27.** Abouelmagd, E.I., Kalantonis, V.S. and Perdiou, A.E.: 2021, A Quantized Hill's Dynamical System, *Advances in Astronomy*, vol. 2021, Article ID 9963761, 7 pages.

### **Refereed Edited Volumes**

- V1.** Kalantonis, V.S., Perdiou, A.E. and Douskos, C.N.: 2018, "Asymptotic orbits in Hill's problem when the larger primary is a source of radiation", in Rassias Th.M. (Ed.) *Applications of Nonlinear Analysis*. Springer Optimization and Its Applications, 134, 523-535, Springer, Cham.
- V2.** Kalantonis, V.S., Perdiou, A.E. and Perdios, E.A.: 2019, "On the Stability of the Triangular Equilibrium Points in the Elliptic Restricted Three-Body Problem with Radiation and Oblateness", in Rassias Th.M., Pardalos, P. (Eds) *Mathematical Analysis and Applications*. Springer Optimization and Its Applications, 154, 273-286, Springer, Cham.
- V3.** Kalantonis, V.S., Vincent, A.E., Gyegwe, J.M. and Perdios, E.A.: 2021, "Periodic Solutions around the Out-of-Plane Equilibrium Points in the Restricted Three-Body Problem with Radiation and Angular Velocity Variation", in Ras-

- sias Th.M., Pardalos, P.M. (Eds) *Nonlinear Analysis and Global Optimization*, Springer Optimization and Its Applications, 167, 251-275, Springer, Cham.
- V4.** Doschoris, M., Papargiri, A., Kalantonis, V.S. and Vafeas, P.: 2021, “Application of Boundary Perturbations on Medical Monitoring and Imaging Techniques”, in Rassias, Th.M. (Ed.) *Nonlinear Analysis, Differential Equations, and Applications*, Springer Optimization and Its Applications, 173, to appear, Springer, Cham.
- V5.** Fragoyiannis, G., Papargiri, A., Kalantonis, V.S., Doschoris, M. and Vafeas, P.: 2021, Image reconstruction for positron emission tomography based on Chebyshev polynomials”, in Rassias, Th.M., Daras, N.J. (Eds) *Approximation and Computation in Science and Engineering*, Springer Optimization and Its Applications, accepted, Springer, Cham.

#### **Conference publications**

- C1.** Kalantonis, V.S., Perdiou, A.E. and Perdios, E.A.: 2002, “On Regions of Convergence of Newton’s Method for Computing Periodic Orbits on a Surface of Section”, in *Proceedings of the 4<sup>th</sup> GRACM Congress on Computational Mechanics*, edited by D. Tsahalis, 1288-1293.
- C2.** Perdios, E.A., Kalantonis, V.S.: 2006, “Sitnikov Motions in the Photogravitational Restricted Three-Body Problem”, in Solomos, N.H. (ed.) *Recent Advances in Astronomy and Astrophysics AIP Conf. Proc.*, vol. 848, pp. 743-747.
- C3.** Kalantonis V.S., Perdios E.A. and Perdiou A.E.: 2006, “An Effect of Oblateness on Families of Periodic Orbits in the Restricted Three-Body Problem”, *Proceedings of the 2<sup>nd</sup> International Conference “From Scientific Computing to Computational Engineering” (2<sup>nd</sup> IC-SCCE)*, edited by D. Tsahalis, pp. 217-223.
- C4.** Perdiou, A.E., Douskos, C.N., Kalantonis, V.S.: 2008, “Homoclinic Connections in the Hill Problem with Radiation”, in Varvoglis, H., Knezevic, Z. (eds) *Dynamics of Celestial Bodies*, in honor of Prof. John D. Hadjidemetriou, Aristotle University of Thessaloniki and Astronomical Observatory of Belgrade, pp. 169-172.

- C5.** Asada, T., Douskos, C., Kalantonis, V., Markellos P.: 2009, “Numerical Exploration of Kaldorian Interregional Macrodynamics: Enhanced Stability and Predominance of Period Doubling under Flexible Exchange Rates”, in Troch, I., Breitenecker, F. (eds) *Mathematical Modeling*, MATHMOD 2009, Vienna University of Technology, pp. 1194-1203.
- C6.** Kalantonis, V.S., Karanikolas, N.D. and Perdios, E.A.: 2011, “Periodic Orbits and Chaos in the Restricted Three-Body Problem with Oblate Primary”, in The 10<sup>th</sup> Hellenic Astronomical Conference, 5-8 September, Ioannina (abstract).
- C7.** Papargiri, A., Kalantonis, V., Vafeas, P., Doschoris, M., Kariotou, F. and Fragoyiannis, G.: 2020, “Effect of Head-Shape Variations on a Three-Shell Forward Electroencephalographic Spherical Model”, *International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2020)*, 17-23 September, Rhodes, to appear in AIP Conference Proceedings.