GENERAL INFORMATION

Name: Euaggelos
Surname: Zotos
Date of birth: April 3rd, 1986
Address: Al. Papadiamanti, 1, Preveza, ZIP Code: GR-48 100, Greece
E-mail: evzotos@physics.auth.gr

Euaggelos Zotos is a senior researcher in Physics Department (Section of Astronomy and Astrophysics) of Aristotle University of Thessaloniki Greece. His research areas expand from applied mathematics to nonlinear dynamics and Astrophysics. He has published, so far, more than 100 novel research papers in foreign prominent peer-refereed journals, while he collaborates with several internationally well-known experts and researchers around the globe. Apart from research he is also keen on writing fiction and movie scripts. He is mostly interested in science fiction and supernatural horror short stories and novellas. Until now, he has published three collections of short stories, one in science fiction (space opera, in particular) and two in supernatural horror.

ACADEMIC QUALIFICATIONS

2008: Degree in Physics in Aristotle University of Thessaloniki, Greece
2010: MSc in Computational Physics in Aristotle University of Thessaloniki, Greece
2013: PhD in Galactic Dynamics in Aristotle University of Thessaloniki, Greece

WORK EXPERIENCE

2009-2019: Working as a test driver at the ///M division of BMW group.
2010-present: Senior researcher in Physics department of Aristotle University of Thessaloniki, Greece

TECHNICAL SKILLS

Programming Languages: Standard FORTRAN 77, C++, Pascal, Python
Operating Systems: Windows, UNIX, Linux
Software: Mathematica, MATLAB, Maple, Gnuplot, Origin

RESEARCH PROJECTS

1. Constructing mathematical models for the motion of stars in galactic systems.
2. Developing new dynamical indicators for distinguishing between order and chaos
3. Investigating the orbital dynamics in systems with escapes.
4. Revealing the properties of the Normally Hyperbolic Invariant Manifolds (NHIMs) in dynamical systems.
5. Determining the basins of attraction and escape in dissipative systems.
6. Studying the nature of orbits in planetary and stellar systems.
7. Working with numerical methods for obtaining the roots of systems of non-linear equations.

AREAS OF EXPERTISE

1. Galactic dynamics
2. Non-Linear dynamics
3. Celestial Mechanics & Dynamical Astronomy
4. Planetary Physics
5. Astrophysics

6. Relativity Theory & Post-Newtonian dynamics
7. Applied Mathematics & Numerical Methods

MEMBERSHIPS

Member of the Center for Fundamental Research in Space Dynamics and Celestial Mechanics (CFRSC)

LIST OF PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED JOURNALS

A1. Caranicolas, N.D., Zotos, E.E.
Chaotic orbits in a 3D galactic dynamical model with a double nucleus
(2009) Mechanics Research Communications, 36 (8), pp. 875-881.

A2. Caranicolas, N.D., Zotos, E.E.
Chaos in a disk galaxy model induced by asymmetries in the dark halo
(2009) Baltic Astronomy, 18 (2), pp. 205-215.

A3. Caranicolas, N.D., Zotos, E.E.
The evolution of chaos in active galaxy models with an oblate or a prolate dark halo component
(2010) Astronomische Nachrichten, 331 (3), pp. 330-337.

A4. Caranicolas, N.D., Zotos, E.E.
Using the S(c) spectrum to distinguish between order and chaos in a 3D galactic potential
(2010) New Astronomy, 15 (5), pp. 427-432.

A5. Zotos, E.E.
Disks controlling chaos in a 3D dynamical model for elliptical galaxies
(2011) Baltic Astronomy, 20 (1), pp. 77-90.

A6. Zotos, E.E.
Are external perturbations responsible for chaotic motion in galaxies?
(2011) Chaos, Solitons and Fractals, 44 (7), pp. 501-509.

A7. Caranicolas, N.D., Zotos, E.E.
Dark halos acting as chaos controllers in asymmetric triaxial galaxy models
(2011) Research in Astronomy and Astrophysics, 11 (7), pp. 811-823.

A8. Zotos, E.E.
A new dynamical model for the study of galactic structure
(2011) New Astronomy, 16 (6), pp. 391-401.

A9. Caranicolas, N.D., Zotos, E.E.
The nature of orbits in a prolate elliptical galaxy model with a bulge and a dense nucleus
(2011) Research in Astronomy and Astrophysics, 11 (12), pp. 1449-1456.

A10. Zotos, E.E.
A new dynamical parameter for the study of sticky orbits in a 3D galactic model
(2011) Baltic Astronomy, 20 (3), pp. 339-354.

A11. Zotos, E.E.
A rational galactic potential with accurate periodic orbits and quasi-integrals of motion
(2012) Astronomical & Astrophysical Transactions, 27 (4), pp. 625-634.

A12. Zotos, E.E.
Using new dynamical indicators to distinguish between order and chaos in a galactic potential producing exact periodic orbits and chaotic components
(2012) Astronomical & Astrophysical Transactions, 24 (4), pp. 635-654.

A13. Caranicolas, N.D., Zotos, E.E.
A semi-numerical method for periodic orbits in a bisymmetrical potential
(2012) Mechanics Research Communications, 40, pp. 41-45.

A14. Zotos, E.E.
Comparing the behavior of orbits in different 3D dynamical models for elliptical galaxies
(2012) Research in Astronomy and Astrophysics, 12 (4), pp. 383-399.

A15. Zotos, E.E.
Order and chaos in a three-dimensional binary system of interacting galaxies
(2012) Astrophysical Journal, 750 (1), art. no. 56.

A16. Zotos, E.E.
Order and chaos in a galactic model with a strong nuclear bar
(2012) Research in Astronomy and Astrophysics, 12 (5), pp. 500-512.

A17. Zotos, E.E.
Trapped and escaping orbits in an axially symmetric galactic-type potential
(2012) Publications of the Astronomical Society of Australia, 29 (2), pp. 161-173.

A18. Zotos, E.E.
Exploring the nature of orbits in a galactic model with a massive nucleus
(2012) New Astronomy, 17 (6), pp. 576-588.

A19. Caranicolas, N.D., Zotos, E.E.
Investigating the nature of motion in 3D perturbed elliptic oscillators displaying exact periodic orbits
(2012) Nonlinear Dynamics, 69 (4), pp. 1795-1805.

A20. Zotos, E.E.
Application of new dynamical spectra of orbits in Hamiltonian systems
(2012) Nonlinear Dynamics, 69 (4), pp. 2041-2063.

A21. Zotos, E.E.
A new dynamical indicator for chaos detection in galactic Hamiltonian systems
(2012) Mathematics in Engineering, Science and Aerospace, 3 (2), pp. 1-16.

A22. Zotos, E.E., Caranicolas, N.D.
Are semi-numerical methods an effective tool for locating periodic orbits in 3D potentials?
(2012) Nonlinear Dynamics, 70 (1), pp. 279-287.

A23. Zotos, E.E.
The Fast Norm Vector Indicator (FNVI) method: A new dynamical parameter for detecting order and chaos in Hamiltonian systems
(2012) Nonlinear Dynamics, 70 (2), pp. 951-978.

A24. Caranicolas, N.D., Zotos, E.E.
Transition between order and chaos in a composite disk galaxy model with a massive nucleus and a dark matter halo

(2013) New Astronomy, 19 (1), pp. 67-73.

A25. Zotos, E.E.
Revealing the character of orbits in a binary system consisting of a primary galaxy and a satellite companion
(2013) Publications of the Astronomical Society of Australia, 30 (1), art. no. e012.

A26. Zotos, E.E.
Revealing the evolution, the stability, and the escapes of families of resonant periodic orbits in Hamiltonian systems
(2013) Nonlinear Dynamics, 73 (1-2), pp. 931-962.

A27. Zotos, E.E., Carpintero, D.D.
Orbit classification in the meridional plane of a disk galaxy model with a spherical nucleus
(2013) Celestial Mechanics and Dynamical Astronomy, 116 (4), pp. 417-438.

A28. Caranicolas, N.D., Zotos, E.E.
Unveiling the influence of dark matter in axially symmetric galaxies
(2013) Publications of the Astronomical Society of Australia, 30 (1), art. no. e049.

A29. Zotos, E.E.
Exploring the origin, the nature, and the dynamical behavior of distant stars in galaxy models
(2013) Nonlinear Dynamics, 74 (3), pp. 831-847.

A30. Zotos, E.E., Caranicolas, N.D.
Order and chaos in a new 3D dynamical model describing motion in non-axially symmetric galaxies
(2013) Nonlinear Dynamics, 74 (4), pp. 1203-1221.

A31. Zotos, E.E., Caranicolas, N.D.
Revealing the influence of dark matter on the nature of motion and the families of orbits in axisymmetric galaxy models
(2013) Astronomy and Astrophysics, 560, art. no. A110.

A32. Zotos, E.E.
How does the structure of spherical dark matter haloes affect the types of orbits in disk galaxies?
(2014) Baltic Astronomy, 23 (1), pp. 37-54.

A33. Zotos, E.E.
How does the mass transport in disk galaxy models influence the character of orbits?
(2014) Baltic Astronomy, 23 (3-4), pp. 151-170.

A34. Zotos, E.E.
Classifying orbits in galaxy models with a prolate or an oblate dark matter halo component
(2014) Astronomy and Astrophysics, 563, art. no. A19.

A35. Zotos, E.E., Caranicolas, N.D.
Determining the nature of orbits in disk galaxies with non-spherical nuclei
(2014) Nonlinear Dynamics, 76 (1), pp. 323-344.

A36. Zotos, E.E.
A Hamiltonian system of three degrees of freedom with eight channels of escape: The Great Escape
(2014) Nonlinear Dynamics, 76 (2), pp. 1301-1326.

A37. Zotos, E.E.

Determining the nature of orbits in a three-dimensional galaxy model hosting a Bl Lacertae object
(2014) Astronomische Nachrichten, 335 (8), pp. 886-899.

A38. Zotos, E.E.
Orbit classification of low and high angular momentum stars
(2014) Mechanics Research Communications, 62, pp. 102-110.

A39. Zotos, E.E., Caranicolas, N.D.
Interplay between Dark Matter and Galactic Structure in Disk and Oblate Elliptical Galaxies
(2014) Journal of Astrophysics and Astronomy, 35 (4), pp. 649-673.

A40. Zotos, E.E.
Escapes in Hamiltonian systems with multiple exit channels: Part I
(2014) Nonlinear Dynamics, 78 (2), pp. 1389-1420.

A41. Zotos, E.E.
Revealing the escape mechanism of three-dimensional orbits in a tidally limited star cluster
(2015) Monthly Notices of the Royal Astronomical Society, 446 (1), pp. 770-792.

A42. Zotos, E.E.
Classifying orbits in the classical Henon–Heiles Hamiltonian system
(2015) Nonlinear Dynamics, 79 (3), pp. 1665-1677.

A43. Zotos, E.E.
Escape dynamics and fractal basin boundaries in Seyfert galaxies
(2015) Nonlinear Dynamics, 80 (3), pp. 1109-1131.

A44. Zotos, E.E.
Crash test for the Copenhagen problem with oblateness
(2015) Celestial Mechanics and Dynamical Astronomy, 122 (1), pp. 75-99.

A45. Zotos, E.E., Caranicolas, N.D., Doni, E.G.
Classifying orbits in a new dynamical model describing motion in a prolate or an oblate elliptical galaxy
(2015) Nonlinear Studies, 22 (1), pp. 1-29.

A46. Zotos, E.E.
Orbital dynamics in the planar Saturn-Titan system
(2015) Astrophysics and Space Science, 358 (1), art. no. 4, 12 p.

A47. Zotos, E.E.
How does the oblateness coefficient influence the nature of orbits in the restricted three-body problem?
(2015) Astrophysics and Space Science, 358 (2), art. no. 33, 18 p.

A48. Zotos, E.E.
Comparing the escape dynamics in tidally limited star cluster models
(2015) Monthly Notices of the Royal Astronomical Society, 452 (1), pp. 193-209.

A49. Zotos, E.E.
Unveiling the influence of the radiation pressure in nature of orbits in the photogravitational restricted three-body problem
(2015) Astrophysics and Space Science, 360 (1), art. no. 1, 19 p.

A50. Zotos, E.E.
Orbit classification in the planar circular Pluto-Charon system

(2015) Astrophysics and Space Science, 360 (1), art. no. 7, pp. 1-14.

A51. Jung, C., Zotos, E.E.
Order and chaos in a three dimensional galaxy model
(2015) Mechanics Research Communications, 69, pp. 45-53.

A52. Zotos, E.E.
Classifying orbits in the restricted three-body problem
(2015) Nonlinear Dynamics, 82 (3), pp. 1233-1250.

A53. Zotos, E.E.
Escape dynamics in a Hamiltonian system with four exit channels
(2015) Nonlinear Studies, 22 (3), pp. 433-452.

A54. Zotos, E.E.
Escapes in Hamiltonian systems with multiple exit channels: Part II
(2015) Nonlinear Dynamics, 82 (1-2), pp. 357-398.

A55. Jung, C., Zotos, E.E.
Introducing a New 3D Dynamical Model for Barred Galaxies
(2015) Publications of the Astronomical Society of Australia, 32, art. no. e042.

A56. Zotos, E.E.
Revealing the network of periodic orbits in galaxy models with a prolate or an oblate dark matter halo component
(2016) Baltic Astronomy, 25, pp. 119-138.

A57. Zotos, E.E.
Classifying orbits of low and high energy stars in axisymmetric disk galaxies
(2016) Baltic Astronomy, 25, pp. 139-151.

A58. Zotos, E.E.
Escape dynamics in a binary system of interacting galaxies
(2016) New Astronomy, 42, pp. 10-23.

A59. Zotos, E.E., Caranicolas, N.D.
Determining the type of orbits in the central regions of barred galaxies
(2016) Research in Astronomy and Astrophysics, 16 (2), art. no. 006.

A60. Zotos, E.E.
Escape dynamics and fractal basins boundaries in the three-dimensional Earth-Moon system
(2016) Astrophysics and Space Science, 361 (3), art. no. 94, pp. 1-23.

A61. Zotos, E.E.
Fugitive stars in active galaxies
(2016) Nonlinear Dynamics, 83 (3), pp. 1477-1496.

A62. Jung, C., Zotos, E.E.
Orbital and escape dynamics in barred galaxies - I. The 2D system
(2016) Monthly Notices of the Royal Astronomical Society, 457 (3), pp. 25830-2603.

A63. Zotos, E.E.
Fractal basins of attraction in the planar circular restricted three-body problem with oblateness and radiation pressure

(2016) Astrophysics and Space Science, 361 (6), art. no. 181.

A64. Zotos, E.E.
Fractal basin boundaries and escape dynamics in a multiwell potential
(2016) Nonlinear Dynamics, 85 (3), pp. 1613-1633.

A65. Zotos, E.E.
Escape and collision dynamics in the planar equilateral restricted four-body problem
(2016) International Journal of Non-Linear Mechanics, 86, pp. 66-82.

A66. Jung, C., Zotos, E.E.
Orbital and escape dynamics in barred galaxies - II. The 3D system: exploring the role of the normally hyperbolic invariant manifolds
(2016) Monthly Notices of the Royal Astronomical Society, 463 (4), pp. 3965-3988.

A67. Zotos, E.E.
Revealing the basins of convergence in the planar equilateral restricted four-body problem
(2017) Astrophysics and Space Science, 362 (1), art. no. 2.

A68. Zotos, E.E., Jung, C.
Unraveling the escape dynamics and the nature of the normally hyperbolic invariant manifolds in tidally limited star clusters
(2017) Monthly Notices of the Royal Astronomical Society, 465 (1), pp. 525-546.

A69. Zotos, E.E.
Determining the Newton-Raphson basins of attraction in the electromagnetic Copenhagen problem
(2017) International Journal of Non-Linear Mechanics, 90, pp. 111-123.

A70. Zotos, E.E.
Distinguishing between order and chaos in a simple barred galaxy model
(2017) Astronomische Nachrichten, 338 (5), pp. 614-620.

A71. Zotos, E.E.
Elucidating the escape dynamics of the four hill potential
(2017) Nonlinear Dynamics, 89 (1), pp. 135-151.

A72. Zotos, E.E.
Orbit classification in the Hill problem: I. The classical case
(2017) Nonlinear Dynamics, 89 (2), pp. 901-923.

A73. Zotos, E.E.
Investigating the planar circular restricted three-body problem with strong gravitational field
(2017) Meccanica, 52 (9), pp. 1995-2021.

A74. Zotos, E.E.
Equilibrium points and basins of convergence in the linear restricted four-body problem with angular velocity
(2017) Chaos, Solitons and Fractals, 101, pp. 8-19.

A75. Zotos, E.E.
An overview of the escape dynamics in the Henon–Heiles Hamiltonian system
(2017) Meccanica, 52 (11-12), pp. 2615-2630.

A76. Zotos, E.E.

Comparing the fractal basins of attraction in the Hill problem with oblateness and radiation
(2017) Astrophysics and Space Science, 362 (10), art. no. 190.

A77. Zotos, E.E.
Basins of convergence of equilibrium points in the pseudo-Newtonian planar circular restricted three-body problem
(2017) Astrophysics and Space Science, 362 (10), art. no. 195.

A78. Zotos, E.E.
Basins of convergence of equilibrium points in the generalized Hill problem
(2017) International Journal of Bifurcation and Chaos, 27 (12), id. 1730043-2193.

A79. Zotos, E.E., Jung, C.
Orbital and escape dynamics in barred galaxies - III. The 3D system: correlations between the basins of escape and the NHIMs
(2018) Monthly Notices of the Royal Astronomical Society, 473 (1), pp. 806-825.

A80. Zotos, E.E., Suraj, S. Md
Basins of attraction of equilibrium points in the planar circular restricted five-body problem
(2018) Astrophysics and Space Science, 363 (1), art. no. 20.

A81. Zotos, E.E., Jung, C.
Correlating the escape dynamics and the role of the normally hyperbolic invariant manifolds in a binary system of dwarf spheroidal galaxies
(2018) International Journal of Non-Linear Mechanics, 99, pp. 182-203.

A82. Zotos, E.E., Riano-Doncel, A., Dubeibe, F.L.
Basins of convergence of equilibrium points in the generalized Henon–Heiles system
(2018) International Journal of Non-Linear Mechanics, 99, pp. 218-228.

A83. Dubeibe, F.L., Riano-Doncel, A., Zotos, E.E.
Dynamical analysis of bounded and unbounded orbits in a generalized Henon–Heiles system
(2018) Physics Letters A, 382(13), pp. 904-910.

A84. Zotos, E.E.
Investigating the Newton-Raphson basins of attraction in the restricted three-body problem with modified Newtonian gravity
(2018) Journal of Applied Mathematics and Computing, 56(1-2), pp. 53-71.

A85. Zotos, E.E., Dubeibe, F.L.
Orbital dynamics in the post-Newtonian planar circular restricted Sun-Jupiter system
(2018) International Journal of Modern Physics D, 27(4), 1850036.

A86. Zotos, E.E., Suraj, M.S., Aggarwal, R., Satya, S.K.
Investigating the basins of convergence in the circular Sitnikov three-body problem with non-spherical primaries
(2018) Few Body Systems, 59(4), 69.

A87. Zotos, E.E.
Comparing the basins of attraction for several methods in the circular Sitnikov problem with spheroid primaries
(2018) Astrophysics and Space Science, 363(3), art. no. 113.

A88. Zotos, E.E.

On the Newton-Raphson basins of convergence of the out-of-plane equilibrium points in the Copenhagen problem with oblate primaries
(2018) International Journal of Non-Linear Mechanics, 103, pp. 93-103.

A89. Suraj, M.S., Zotos, E.E., Kaur, C., Aggarwal, R., Mittal, A.
Fractal basins of convergence of libration points in the planar Copenhagen problem with a repulsive quasi-homogeneous Manev-type potential
(2018) International Journal of Non-Linear Mechanics, 103, pp. 113-127.

A90. Zotos, E.E., Satya, S.K., Aggarwal, R., Suraj, Md.S.
Basins of convergence in the circular Sitnikov four-body problem with nonspherical primaries
(2018) International Journal of Bifurcation and Chaos, 28 (5), id. 1830016.

A91. Zotos, E.E., Dubeibe, F.L., Gonzalez, G.A.
Orbit classification in an equal-mass non-spinning binary black hole pseudo-Newtonian system
(2018) Monthly Notices of the Royal Astronomical Society, 477 (4), pp. 5388-5405.

A92. Zotos. E.E., Suraj, Md.S., Mittal, A., Aggarwal, R.
Comparing the geometry of the basins of attraction, the speed and the efficiency of several numerical methods
(2018) International Journal of Applied and Computational Mathematics, 4, 105.

A93. Zotos, E.E., Suraj, Md S., Jain, M., Aggarwal, R.
Revealing the Newton–Raphson basins of convergence in the circular pseudo-Newtonian Sitnikov problem
(2018) International Journal of Non-Linear Mechanics, 105, pp. 43-54.

A94. Zotos, E.E., Nagler, J.
On the classification of orbits in the three-dimensional Copenhagen problem with oblate primaries
(2019) International Journal of Non-Linear Mechanics, 108, pp. 55-71.

A95. Suraj, Md S., Zotos, E.E., Aggarwal, R., Mittal, A.
Unveiling the basins of convergence in the pseudo-Newtonian planar circular restricted four-body problem
(2019) New Astronomy, 66, pp. 52-67.

A96. Suraj, Md S., Sachan, P., Zotos, E.E., Mittal, A., Aggarwal, R.
On the fractal basins of convergence of the libration points in the axisymmetric five-body problem: The convex configuration
(2019) International Journal of Non-Linear Mechanics, 109, pp. 80-106.

A97. Zotos, E.E., Qi, Y.
Near-optimal capture in the planar circular restricted Pluto-Charon system
(2019) Planetary and Space Science, 165, pp.85-98.

A98. Zotos, E.E., Suraj, Md S., Aggarwal, R., Mittal, A.
On the Convergence Dynamics of the Sitnikov Problemwith Non-spherical Primaries
(2019) International Journal of Applied and Computational Mathematics, 5, 43.

A99. Zotos, E.E., Papadakis, K.E.
Orbit classification and networks of periodic orbits in the planar circular restricted five-body problem
(2019) International Journal of Non-Linear Mechanics, 111, pp. 119-141.

A100. Suraj, Md S., Sachan, P., Zotos, E.E., Mittal, A., Aggarwal, R.

On the Newton–Raphson basins of convergence associated with the libration points in the axisymmetric restricted five-body problem: The concave configuration
(2019) International Journal of Non-Linear Mechanics, 112, pp. 25-47.

A101. Zotos, E.E., Jung, C.
Orbital and escape dynamics in barred galaxies - IV. Heteroclinic connections
(2019) Monthly Notices of the Royal Astronomical Society, 487 (1), pp. 1233-1247.

A102. Zotos, E.E., Dubeibe, F.L., Nagler, J. Tejeda, E.
Orbit classification in a pseudo-Newtonian Copenhagen problem with Schwarzschild-like primaries
(2019) Monthly Notices of the Royal Astronomical Society, 487 (2), pp. 2340-2353.

A103. Zotos, E.E., Chen, W., Jung, C.
Escaping from a degenerate version of the four hill potential
(2019) Chaos, Solitons and Fractals, 126, pp. 12-22.

A104. Zotos, E.E., Jung, C.
A three-dimensional dynamical model for double-barred galaxies, escape dynamics and the role of the NHIMs
(2020) Communications in Nonlinear Science and Numerical Simulation, 80, 104989.

CHAPTERS IN BOOKS

B1. Zotos, E.E.
Exploring the Nature of Motion in Quiet and Active Galaxies with a Satellite Companion
Chapter 3 in Galaxies: Evolution, Morphology and Dynamics (2012), Nova Publishers.

B2. Zotos, E.E.
Elucidating the Escape Process of Stars in a Tidally Limited Open Star Cluster
Chapter 8 in Horizons in World Physics (2016), Nova Publishers.

B3. Zotos, E.E.
Unveiling the Escape Mechanism of Orbits in Hamiltonian Systems with Multiple Exit Channels
Chapter 5 in Chaos Theory: Origins, Applications and Limitations (2016), Nova Publishers.

TITLES IN CONFERENCES

C1. Caranicolas, N.D., Zotos, E.E.
Order and chaos in a triaxial galaxy model with a dark halo component
10th Hellenic Astronomical Conference, Proceedings of the conference held at Ioannina, Greece, 5-8 September 2011. Edited by Iossif Papadakis and Anastasios Anastasiadis., pp.23-23.

C2. Zotos, E.E.
Investigating the influence of dark matter on the nature of motion in axially symmetric
11th Hellenic Astronomical Conference, held 8-12 September, 2013 in Athens, Greece., pp.32-32.