



Theocharis Apostolatos

Curriculum Vitae

Personal Information

Name Theocharis Apostolatos (Θεοχάρης Αποστολάτος *in Greek*)
Birth Date May 24, 1966
Nationality Greek
Marital St. Married, with two children
Address Pindou 11, Ilioupoli, GR16343, Athens, Greece
Off. Address Section of Astronomy, Astrophysics, and Mechanics, Department of Physics, University of Athens, Panepistimiopolis Zografos GR15373, Athens, Greece
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Education

1990–1994 **PhD in Physics**, *California Institute of Technology, USA.*
1989–1990 **Master's in Physics**, *California Institute of Technology, USA.*
1989–1990 **Bachelor in Physics**, *University of Athens, Greece, grade – 9.5 out of 10.*
1st in my class

PhD Thesis

Title *Topics in General Relativity: naked singularities, and Theoretical aspects of gravitational waves from merging compact binaries*
Supervisor Kip Thorne

Academic Positions

1994–1996 **Postdoc**, *Max-Planck Group 'Gravitationstheorie', Friedrich Schiller Universität Jena, Germany.*
1998-2005 **Lecturer**, *University of Athens, Greece.*
2005-2008 **Tenure track Assistant Professor**, *University of Athens, Greece.*
2008-2015 **Tenure Assistant Professor**, *University of Athens, Greece.*
2015-now **Associate Professor**, *University of Athens, Greece.*

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Awards

- 1984 3rd place in the panhellenic contest in Mathematics, *Athens*
- 1984 Silver medal in Balkan contest of Mathematics, *Athens*
- 1984 One of the six member of the Greek team in the 25th Mathematical Olympiad, *Prague*
- 1987-88 Papadakis' Greek Fellowship for undergraduate Greek students
- 1989-94 Teaching and Research Assistanship during graduate studies at Caltech
- 2012 DAAD (german) Fellowship for non-German University professors

Teaching Experience

- 1989-92 Grader in Phys 1a,b,c and Quantum Mechanics 12b, while a graduate student at Caltech
- 1990-94 Teaching Phys. Labs: 3, 5, 6, 7, while a graduate student at Caltech
- 1998-present Teaching Newtonian Mechanics [for 16 yrs], Analytical Mechanics [for 16 yrs], Special Relativity [for 15 yrs], Non-Linear Dynamical Systems [for 7 years], Real Analysis [for 4 yrs], Electromagnetism for Chemists [for 2 years], Phys. Labs: (Mechanics [for 16 yrs], Solid state Physics [for 2 yrs], and Astrophysics [for 9 yrs]), General Relativity (graduate level) [for 2 yrs], Advanced Mechanics (graduate level) [for 14 yrs], Non-Linear Dynamics (graduate level) [for 2 years] at the University of Athens

Other Teaching Activities

- 2000-present Notes on Newtonian Mechanics, Analytical Mechanics, Special Relativity, and Real Analysis for the students (*in Greek*)
- 2000-present Organized (along with two other Professors) an unofficial seminar for students interested in theoretical aspects of physics, where the students are called to present, analyse, and discuss various theoretical problems from the whole spectrum of Physics
- 2000-present Supervisor of 33 undergraduate Diploma thesis
- 2001-present Supervisor of 11 graduate Master thesis [A. Chronopoulos [2001], T. Sotiriou [2005], G. Pappas [2006], J. Deligiannis [2007], T. Sarantides [2008], D. Antonopoulou [2009], P. Koumantos [2010], A. Eleni [2012], A. Nathanael [2014], J. Anastasiadis [2015].
- 2002-2006 Supervisor (along with Professor Emeritus F. Hatzioannou) of Michel Leclerc's PhD thesis: "*Gauge theories on gravity: Symmetry breaking, coupling with matter and classic relativity limit*"
- 2006-2012 Supervisor of George Pappas's PhD thesis: "*Studies on axial symmetric stationary spacetimes, and exploiting them to describe the neighborhood of compact stars*"
- 2014- Supervisor of Areti Eleni's PhD thesis: "*Newtonian models with dissipation as a test-bed of relativistic EMRI orbital evolution*"

Languages

- Greek Mother-tongue
- English Very good

Conferences

Participation in Conferences

- March 1991 Pacific Coast Gravity Meeting, Claremont, CA, USA
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- March 1992 Pacific Coast Gravity Meeting, Salt Lake City, UT, USA
- March 1993 Pacific Coast Gravity Meeting, Santa Barbara, CA, USA
- June 1993 Conference on quantum aspects of black holes, Santa Barbara, CA, USA
- January 1994 Workshop on gravitational waves from coalescing compact binaries, Caltech, CA, USA
- March 1994 Pacific Coast Gravity Meeting, Corvallis, OR, USA
- July 1994 7th Marcel Grossman Conference, Stanford, CA, USA
- August 1995 GR14 International Conference, Florence, Italy
- June-July 1995 2nd Panhellenic Symposium of Astronomy, Thessaloniki, Greece
- March 1996 Mathematical aspects of theories of gravitation. Workshop on post-Newtonian expansions, alternative theories of gravity, pulsar data analysis, Warsaw, Poland
- Septemb 1996 NEB VII Recent Developments in Gravity, Athens, Greece
- July 1997 3rd Panhellenic Symposium of Astronomy & 6th JENAM, Chalkidiki, Greece
- August 1998 NEB VIII Recent Developments in Gravity, Samos, Greece
- June 2000 3rd Capra Meeting on Gravitational Radiation Reaction, Caltech, CA, USA
- June 2001 2nd EU network meeting, Thessaloniki, Greece
- August 2002 NEB X Recent Developments in Gravity, Chalkidiki, Greece
- Septemb 2003 6th Panhellenic Symposium of Astronomy, Penteli, Greece
- June 2004 NEB XI Recent Developments in Gravity, Mytilene, Greece
- April 2005 1st VIRGO-EGO Scientific Forum Meeting, Pisa, Italy
- Septemb 2005 7th International Conference of HELASET, Lixouri, Greece
- June 2006 NEB XII Recent Developments in Gravity, Nafplion, Greece
- June 2008 NEB XIII Recent Developments in Gravity, Thessaloniki, Greece
- Septemb 2009 Conference AstroLISA@BC, Barcelona, Spain
- June 2010 NEB XIV Recent Developments in Gravity, Ioannina, Greece
- Septemb 2010 LISA Astro-GR@Paris, Paris, France
- June 2012 NEB XV Recent Developments in Gravity, Chania, Greece
- Sept-Oct 2012 Kavli workshop: Chirps, Mergers and Explosions: The Final Moments of Coalescing Compact Binaries, Santa Barbara, CA, USA
- January 2013 Workshop on Gravitational Physics, Tübingen, Germany
- June 2015 12th International Conference of HELASET, Thessaloniki, Greece
- Septemb 2014 11th International Conference of HELASET, Athens, Greece
- Septemb 2014 NEB XVI Recent Developments in Gravity, Mykonos, Greece
- July 2015 Black-Sea Conference, Tübingen, Germany

Invited Talks-besides Conferences

- Feb, Oct 1995 University of Jena, Jena, Germany
- January 2000 National Observatory of Athens, Penteli, Greece
- July 2000 Albert Einstein Institute, Potsdam, Germany
- February 2001 Aristotle University, Thessaloniki, Greece
- Septemb 2005 Observatoire de Paris, Paris, France

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- October 2007 Academy of Athens, Athens, Greece
- February 2008 National Observatory of Athens, Penteli, Greece
- March 2009 University of Tübingen, Tübingen, Germany
- Novemb 2011 University of Tübingen, Tübingen, Germany
- Decemb 2012 in the Winter School of Astrophysics, Thessaloniki, Greece
- 1996 - 2015 7 talks in the University of Athens, Athens, Greece
- 2002 - 2012 Popularizing lectures in various places in Greece
- [Organizing Conferences](#)
- January 1994 Workshop on gravitational waves from coalescing compact binaries [Local organizing committee], Caltech, CA, USA
- June 2006 NEB XII Recent Developments in Gravity [Organizing committee], Nafplion, Greece
- Septemb 2014 GR@GR (NEB XVI Recent Developments in Gravity) [Chairman of the Organizing Committee], Mykonos, Greece

Journal Reviewer

Monthly Notices of Royal Astronomical Society
 Classical and Quantum Gravity
 General Relativity and Gravitation
 Central European Journal of Physics
 International Journal of Bifurcations and Chaos
 Physics International (Editorial Board)

Research Interests

- Naked Singularities** While a graduate student I studied the role of rotation in gravitational collapse. I analytically proved, in collaboration with my supervisor K. Thorne, that an infinite cylindrical shell would stop its collapse into a linear singularity, if the mass is endowed with a non-vanishing rotation. The answer is in favor of the cosmic censorship conjecture of Penrose [see A-1, B-1].
- Binary orbits** In collaboration with Thorne, Poisson, Ori, and Kennefick I studied the evolution of slightly eccentric orbits of binaries due to gravitational radiation, by means of perturbation analysis. Although the eccentricity tends to decrease initially, there is an opposite effect in the strong gravity region, close to the innermost circular orbit. Later on I (in collaboration with Cutler, Sussman and Thorne) looked at the evolution of the orbital plane –and as a consequence of the corresponding gravitational waves– due to spin-orbit and spin-spin coupling of the two bodies. Approximate analytical expressions were built for the precession of the orbital plane due to spin-orbit coupling alone, and later on for some special cases of spin-orbit and spin-spin coupling. While a post-doc in Jena, I studied the consequences of this precession in a pulsar that is orbiting around a massive black hole [see A-1, B-3, B-4, B-6, B-8, D-2, D-3].

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- Gravitational waves and data analysis In collaboration with people from Thorne's group I studied the implications of various orbital characteristics on the gravitational waves emitted by binaries. I dealt with problems related with theoretical aspects of producing suitable templates to search for a gravitational wave in the output of an interferometric detector, and constructed a measure of the suitability of a family of templates to search for true gravitational waves (the Fitting Factor FF). This measure is intimately connected with the right placing of templates in a bank, and could be used as a useful tool to measure what type of Post-Newtonian family of templates are good enough to detect a different family. Moreover, I with my Master student Chronopoulos, showed that sometimes a less faithful family of templates could be better in searching signals than a more accurate one [see A-1, B-2, B-4, B-5, B-7, B-10, D-1, D-2, D-3, D-4].
- Oscillating neutron stars Based on the previous expertise of Prof. K. Kokkotas with respect to various modes of compact-star oscillations, we studied the possibility of constraining the equation of state of a compact star by examining the gravitational-wave signal it would emit (astroseismology). Later on I collaborated with N. Stergioulas and J. Font, trying to identify new types of modes that arise in differentially rotating compact stars. Apart of exploiting these modes to detect differential rotation, we found that the existence of differential rotation could make the oscillations easier to detect, by lowering the corresponding frequencies to ranges that interferometric detectors are more sensitive [see B-9, B-12].
- Analytic Metrics Working with my PhD student G. Pappas, we have tried to construct analytic metrics, based on the formalism of Ernst for stationary axisymmetric spacetimes, that are capable of capturing all the physical characteristics of the geometry around a compact star. We have ended up with a 4-parameter metric that could describe quite accurately the exterior of all numerical neutron-star models that are built with any possible realistic equation of state. In the process of comparing analytic and numerical metrics we found a subtle pitfall in transforming isotropic coordinates to the corresponding Weyl-Papapetrou coordinates and suggested an alternative proper transformation. [see B-16, B-22].
- Relativistic Moments In an attempt to understand the definition of Hansen-Geroch multipole moments in relativity, and later use them as a useful tool to compare models of compact stars that are constructed numerically, we (along with T. Sotiriou, then a Master-Thesis student of mine) discovered a wrong formula connecting the higher to lower electromagnetic/mass moments. Then we used this updated formula to generalize the results of F. Ryan relating observable quantities with the spacetime metric background around a generic isolated body in the case that it is endowed with electric charges and currents as well. More recently we examined the formulae that were used to measure the first 4 mass and mass-current moments of a numerical compact star. We discovered a subtle issue that was causing a misleading computation of the moments. We corrected them and showed that previous comparisons of analytic and numerical spacetimes were finally better than what was initially thought. Finally we used these corrected moments to compare numerical models with our own ansatz for the corresponding analytic metric. [see B-14, B-15, B-20, B-22, B-23, C-1, D-11].

- Non-Kerr objects Exploiting the fundamental qualitative differences between an integrable and another system that is slightly non-integrable (according to KAM theorem) we (in collaboration with G. Loukes and G. Contopoulos) found a generic way to test if the gravitational wave signal is emitted from an EMRI (extreme-mass ratio inspiral) in a pure Kerr background or in a perturbed Kerr one. The idea is based on the fact that the resonance condition of a slightly perturbed integrable system (thus being non-integrable) is met for a finite width of initial conditions. Thus by monitoring the fundamental frequencies incorporated in the signal, one could verify the non-Kerr-ness of the central object by observing a persistence of a comensurate ratio of such frequencies, instead of a continuous change of it. The method works irrespective of the way the background deviates from Kerr [see B-17, B-18, B-19, D-9, D-10].
- Newtonian analogues Following old (of W. Israel) and more recent (of C. Will) analogies found between Kerr metric and the 250-year-old problem of Euler we (with my undergrad student K. Hatziiioannou and G. Pappas) found a whole new set of striking similarities between the two problems. We are exploiting this analogy to predict qualitatively new characteristics for EMRIs in Kerr, by studying the behavior of Euler’s problem when an artificial dissipative force (self-force like) is used to evolve an orbit. Collaborating with K. Glampedakis we recently showed that the Euler problem lead to a newtonian wave solutions that shares a lot of common properties with the scalar waves in Kerr [see B-21, C-1, D-12, D-13].
- Non-gravitational problems Collaborating with my former teacher Prof. Hatziiioannou we found an elegant and powerful way to approximate the evolution of an oscillator the frequency of which is time-dependent (either due to a given law or stochastically). The method is based on separating the hermitian from the non-hermitian part of the phase evolution. Also I found some simple geometric ways to obtain answers in physical problems that are difficult get otherwise. Some of them I use as educational tools in my teaching. For example simple geometrical arguments with respect to orthogonal triangles, help me analysing the kinematical properties of special-relativistic reactions [see B-11, C-2].
- Universality of neutron stars We have shown that neutron stars can be very accurately described solely by their first 3 multipole moments, irrespectively of the equation of state that is assumed to describe its interior matter. This universality holds true for quark stars as well. We have shown that this is an emergent symmetry of neutron stars showing up due to the effective polytropic index of matter at these high densities [see B-23, B-24, B-25, B-26].

Publications - Citations

The numbers in square brackets [] correspond to the citations -without self-references- on each paper. Total number of citations without self-references (on June, 2015) is **1257** (source SAO/NASA ADS, and google.scholar).

PhD Thesis

- A.1 ‘Topics in General Relativity: naked singularities, and Theoretical aspects of gravitational waves from merging compact binaries’, Ph.D. Thesis, Caltech (1994). [3]

Papers Journals

- B.1 ‘Rotation halts cylindrical, relativistic gravitational collapse’, T. A. Apostolatos and K. S. Thorne, Phys. Rev. D 46, 2435 (1992). [57]

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- B.2 ‘The last three minutes: Issues in gravitational wave measurements of coalescing compact binaries’, C. Cutler, T. A. Apostolatos, L. Bildsten, L. S. Finn, E. E. Flanagan, D. Kennefick, D. M. Markovic, A. Ori, E. Poisson, G. J. Sussman, and K. S. Thorne, *Phys. Rev. Lett.* 70, 2984 (1993). [325]
- B.3 ‘Gravitational Radiation from a particle in circular orbit around a black hole. III: Stability of circular orbits under radiation reaction’, T. A. Apostolatos, D. Kennefick, A. Ori, and E. Poisson, *Phys. Rev. D* 47, 5376 (1993). [39]
- B.4 ‘Spin induced orbital precession and its modulation of the gravitational wave-forms from merging binaries’, T. A. Apostolatos, C. Cutler, G. J. Sussman, and K. S. Thorne, *Phys. Rev. D* 49, 6274 (1994). [253]
- B.5 ‘Search templates for gravitational waves from precessing inspiraling binaries’, T. A. Apostolatos, *Phys. Rev. D* 52, 605 (1995). [151]
- B.6 ‘A spinning test body in the strong field of a Schwarzschild black hole’, T. A. Apostolatos, *Clas. Quan. Grav.* 13, 799 (1996). [17]
- B.7 ‘Construction of a template family for the detection of gravitational waves from coalescing binaries’, T. A. Apostolatos *Phys. Rev. D* 54, 2421 (1996). [55]
- B.8 ‘The influence of spin-spin coupling on inspiraling compact binaries with $M_1 = M_2$ and $S_1 = S_2$ ’, T. A. Apostolatos, *Phys. Rev. D* 54, 2438 (1996). [40]
- B.9 ‘The inverse problem for pulsating neutron stars: a ‘fingerprint analysis’ for the supranuclear equation of state’, K. D. Kokkotas, T. A. Apostolatos, N. Andersson, *Mon.Not.Roy.Astron.Soc.* 320, 307 (2001). [54]
- B.10 ‘Less Accurate but more efficient family of search templates for detection of gravitational waves from inspiraling compact binaries’, A. E. Chronopoulos, and T. A. Apostolatos, *Phys. Rev. D* 64, 042003 (2001). [8]
- B.11 ‘Hodograph: A very useful tool to solve difficult kinematic problems’, T. A. Apostolatos, *American Journal of Physics* 71(3), 261 (2003). [11]
- B.12 ‘Non-linear pulsations in differentially rotating neutron stars: mass-shedding-induced damping and splitting of the fundamental mode’, N. Stergioulas, T. A. Apostolatos, J. A. Font, *Mon. Not. Roy. Astr. Soc.* 352(4) 1089 (2004). [47]
- B.13 ‘Corrections and comments on the Multipole Moments of Axisymmetric Electrovacuum Spacetimes’, Thomas P. Sotiriou, Theocharis A. Apostolatos, *Class. Quant. Grav.* 21 5727 (2004). [19]
- B.14 ‘Tracing the geometry around a massive, axisymmetric body to measure, through gravitational waves’, Thomas P. Sotiriou, Theocharis A. Apostolatos, *Phys. Rev. D* 71, 044005 (2005). [6]
- B.15 ‘Stochastic parametric amplification due to higher order correlations: A perturbative approach to non-Abelian effects in time ordering’, Fokion T. Hatzioannou, Theocharis A. Apostolatos, Nikos V. Sarlis *Phys. Rev. E* 74, 051118 (2006). [1]
- B.16 ‘Faithful transformation of quasi-isotropic to Weyl-Papapetrou coordinates: A prerequisite to compare metrics’, George Pappas, and Theocharis A. Apostolatos *Classical and Quantum Gravity* 25, 80022 (2008). [3]

- B.17 ‘How to observe a non-Kerr spacetime using gravitational waves’, Apostolatos Theocharis A., Lukes-Gerakopoulos Georgios, Contopoulos George Phys. Rev. Lett. 103, 111101 (2009). [45]
- B.18 ‘Observable signature of a background deviating from the Kerr metric.’, Lukes-Gerakopoulos Georgios, Apostolatos Theocharis A., Contopoulos George Phys. Rev. D 81, 124005 (2010). [28]
- B.19 ‘Orbits in a Non-Kerr Dynamical System’, Contopoulos G., Lukes-Gerakopoulos G., Apostolatos T. International Journal of Bifurcation and Chaos 21, 2261 (2011). [8]
- B.20 ‘Revising the Multipole Moments of Numerical Spacetimes and its Consequences’, Pappas, G., Apostolatos T. Phys. Rev. Lett. 108, 231104 (2012). [32]
- B.21 ‘The separable analogue of Kerr in Newtonian gravity’, Glampedakis K., Apostolatos T. A, Classical and Quantum Gravity 30, 055006 (2013). [1]
- B.22 ‘An all-purpose metric for the exterior of any kind of rotating neutron star’, Pappas G., Apostolatos T., Mon. Not. Roy. Astr. Soc. 429, 3007 (2013). [2]
- B.23 ‘Effectively universal behavior of rotating neutron stars in general relativity makes them even simpler than their Newtonian counterparts’, Pappas Georgios, Apostolatos Theocharis A. Phys. Rev. Lett. 112, 121101 (2014). [Selected as Editors’ suggestion] [21]
- B.24 ‘Effective no-hair relations for neutron stars and quark stars: Relativistic results’, Yagi Kent, Kyutoku Koutarou, Pappas George, Yunes Nicolás, Apostolatos Theocharis A. Phys. Rev. D 89, 124013 (2014). [21]
- B.25 ‘Why I-Love-Q: Explaining why universality emerges in compact objects’, Yagi Kent, Stein Leo C., Pappas George, Yunes Nicolás, Apostolatos Theocharis A. Phys. Rev. D 90, 1063010 (2014). [10]
- B.26 ‘Emerging universalities in relativistic compact stars, Apostolatos Theocharis A. invited paper - accepted for publication at the Special Issue of the International Journal of Astronomy of SAPUB (2015).

Papers in preparation

- C.1 ‘A Newtonian problem as an insightful paradigm to test some GR tests’, T. A. Apostolatos, T., Pappas, G., Chatziioannou, K., to be submitted to Phys. Rev. D in (2015).
- C.2 ‘Relativistic reactions visualized through right triangles in space’, Theocharis A. Apostolatos, to be resubmitted in American Journal of Physics in (2015). [arXiv:0905.3537]

Papers in Proceedings

- D.1 ‘Modulation of gravitational waveforms from merging binaries caused by spin-induced orbital precession’, T. A. Apostolatos, Proceedings of the 7th Marcel Grossman Meeting, Stanford, USA (1995).
- D.2 ‘The Role of Spin Effects on Gravitational Waves Coming from Compact Binaries’, T. A. Apostolatos, Proceedings of the 2nd Hellenic Astronomical Conference, Thessaloniki, Greece (1995).
- D.3 ‘Adequateness of search templates for gravitational waves from precessing, inspiraling binaries’, T. A. Apostolatos, Proceedings of GR14, Florence, Italy (1995).
- D.4 ‘Gravitational Waveforms from Spinning Objects’, T. A. Apostolatos, Proceedings of the Workshop on Mathematical aspects of theories of gravitation, Warsaw, Poland (1996).

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- D.5 ‘Pulsating axisymmetric modes of neutron stars endowed with realistic differential rotation’, T. A. Apostolatos, N. Stergioulas, J. Font Proceedings of the 7th NEB, Halkidiki, Greece (2002).
- D.6 ‘Non-linear dynamics of differentially rotating relativistic stars’, T. A. Apostolatos, N. Stergioulas, J. Font, Proceedings of the 6th Hellenic Astronomical Conference, Penteli, Greece (2003).
- D.7 ‘Measuring mass moments and electromagnetic moments of a massive, axisymmetric body, through gravitational waves’, RECENT ADVANCES IN ASTRONOMY AND ASTROPHYSICS: 7th International Conference of the Hellenic Astronomical Society, AIP Conference Proceedings, Lixourion, Greece, 2005, Vol. 848, pp. 677-686 (2006).
- D.8 ‘Multipole moments as a tool to infer from gravitational waves the geometry around an axisymmetric body’, ALBERT EINSTEIN CENTURY INTERNATIONAL CONFERENCE, AIP Conference Proceedings, Paris, France 2005, 681, 756 (2006).
- D.9 ‘An observational criterion to look for an inspiral in a non-Kerr spacetime’ Apostolatos T. A., Lukes-Gerakopoulos G., Deligiannis J., Contopoulos G. Journal of Physics: Conference Series, Vol. 189, Issue 1, pp. 012002 (2009).
- D.10 ‘Searching for non-Kerr objects’ Apostolatos T. A., Lukes-Gerakopoulos G., Contopoulos G. Journal of Physics: Journal of Physics: Conference Series, Vol. 283, Issue 1, pp. 012002 (2011).
- D.11 ‘Multipole Moments of numerical spacetimes’ Pappas G., Apostolatos T. A. To appear in the proceedings of the conference, NEB 15 - Recent Developments in Gravity - 20-23 June 2012, Chania, Greece (2012).
- D.12 ‘A Newtonian problem as an insightful tool for the behavior of gravitational-wave sources’ Apostolatos Theocharis A., Pappas George, Chatziioannou Katerina Journal of Physics: Conference Series, Volume 453, Issue 1, article id. 012001 (2013).
- D.13 ‘A Newtonian problem as a guide of relativistic astrophysics’ Apostolatos Theocharis A. 11th Hellenic Astronomical Conference, 8-12 September, 2013 in Athens, Greece. Online at <http://www.helas.gr/conf/2013/>, pp.34-34.
- D.14 ‘Non-Linear Effects in Non-Kerr spacetimes’ Lukes-Gerakopoulos Georgios, Contopoulos George, Apostolatos Theocharis A. Proceedings of the conference “Relativity and Gravitation: 100 Years after Einstein in Prague” (2012).
- D.15 ‘I-Love-Q and other universalities about neutron stars’, NEB XVI Meeting (abstract) (2014).
- D.16 ‘Neutron Stars are Follicly Challenged’ Yunes Nicolas, Yagi Kent, Stein Leo, Pappas George, Apostolatos Theocharis, Kyutoku Koutarou APS April Meeting (abstract #M13.005) (2015).
- D.17 ‘Why neutron stars have three hairs’ Stein Leo, Yagi Kent, Pappas George, Yunes Nicolas, Apostolatos Theocharis APS April Meeting (abstract #M13.006) (2015).

Books

- E.1 Translation of the book of K. S. Thorne “*Black holes and Time Wraps*” (in Greek), ed. Katoptro (1999). ISBN 960-7023-79-X (vol. 1) and 960-7023-81-1 (vol. 2)

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E.2 “*Elements of Theoretical Mechanics*” (University textbook in Greek) Ioannou, P. and Apostolatos, T., ed. Leader Books (2004), 2nd ed. (2007) ISBN 960-7901-51-7

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