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Resumé title

Current Position

position **Ph.D. Candidate at the School of Physics.**
research field **Nuclear Astrophysics.**
affiliation **Aristotle University of Thessaloniki**, Faculty of Sciences, School of Physics, Department of Theoretical Physics.

Education

2010–2016 **Degree in Physics**, Physics Department, Aristotle University of Thessaloniki, Thessaloniki.
2016–2018 **M.Sc. in Computational Physics**, Physics Department, Aristotle University of Thessaloniki, Thessaloniki.
2018–until now **Ph.D. in Nuclear Astrophysics**, Physics Department, Aristotle University of Thessaloniki, Thessaloniki.

Senior thesis

title *Application of Analytical Models of the TOV equations for the study of the r-mode instability in Neutron Stars*
supervisor Ch. C. Moustakidis, Associate Professor
description We employed a set of analytical solution of the TOV equations and in particular, we tried to clarify the effects of the bulk neutron star properties (mass, radius, density distribution) on the r-mode instability window. We found a connection between the critical angular velocity and the temperature and we observed that the critical angular velocity depends mainly on the neutron star radius. The effects of the gravitational mass and the mass distribution are almost negligible.

Master thesis

title *Study of neutron stars instability using the Chandrasekhars criterion and realistic equations of state*
supervisor Ch. C. Moustakidis, Associate Professor
description We study the stability of Einstein's field equations for sphere of fluid, like neutron stars, by employing realistic equations of state describing the relation between pressure and density. In particular, we concentrate on the effect of the adiabatic index on the instability condition. We found that when the critical adiabatic index is equal to the mean adiabatic index, then this index is linearly dependent on the compactness parameter for high values of this parameter. Finally, we examine the possibility to impose constraints, via the adiabatic index, on realistic equations of state in order to ensure stable configurations of neutron stars.

Ph.D. Dissertation

title *Equation of state of nuclear matter with applications to rapid rotating neutron stars*
supervisor Ch. C. Moustakidis, Associate Professor

Research interests

field Nuclear Astrophysics, Theoretical Nuclear Physics, Neutron Stars, Realistic Equations of State in Neutron Stars, Gravitational Physics, Gravitational Waves, Neutron Star Merger

Languages

English	Certificate of Competency in English, B2	<i>Excellent understanding, speaking and writing</i>
German	B1	<i>Modest understanding</i>

Computer skills

Programming Languages	python, c++, c, fortran, Java
Programming Environments	Mathematica, MatLab
Software Operating Systems	Linux, Windows, Unix-based Systems
Other skills	Data Analysis, OpenMP, Computational Analysis, Computational Geometry, Computational Mathematics, 3D-Printing, Latex, Microsoft Office Suite
Codes	RNS code, Lorene code (Rotating neutron stars and simulations)

Conferences - Invited Talk

2020 **Thermal effects on rapidly rotating proto-neutron stars and neutron stars merger remnant**, *Institute for Theoretical Physics at Goethe University and the Frankfurt Institute for Advanced Studies*, AstroCoffee Seminar, <https://astro.uni-frankfurt.de/blog/2020/10/22/thermal-effects-on-rapidly-rotating-proto-neutron-stars-and-neutron-stars-merger-remnant/>.

Conferences - Oral Participation

2019 **Equation of state of cold rapidly rotating neutron stars and the effects of the Keplerian sequence**, *Hellenic Institute of Nuclear Physics*, 5th Workshop.

2019 **Towards the Keplerian sequence: Realistic Equations of State in rapidly rotating neutron stars**, *Hellenic Nuclear Physics Society*, 28th Annual Symposium.

2019 **Effects on the EoS through the uniform rotation of neutron stars**, *DAAD*, Neutron Stars in the Gravitational Wave Era.

2021 **A probe of dense and hot matter: Rapid rotation of proto-neutron stars, hot neutron stars, and neutron stars merger remnant**, *3rd Thessaloniki Student Workshop on Theoretical Physics*, Aristotle University of Thessaloniki.

2021 **Thermal properties of hot and dense matter: Influence of rapid rotation on protoneutron stars, hot neutron stars, and neutron star merger remnants**, *Hellenic Institute of Nuclear Physics*, 6th Workshop.

2021 **Postgraduate Studies at AUTH**, *Participation with oral contribution in the presentation of the Postgraduate programs of AUTH (Master program: Computational Physics)*, Tuesday 18th May 2021.

Conferences - Poster Participation

2017 **3D Printing Technology**, *3rd Conference of Physics Department*, Presentation of Research Activities of Doctoral and Postgraduate Students of the Physics Department.

2018 **Stability of neutron stars and the role of the adiabatic index**, *3rd HEL.A.S. SUMMER SCHOOL AND DAAD SCHOOL*, NEUTRON STARS AND GRAVITATIONAL WAVES.

2019 **Constraints on the equation of state from the stability condition of neutron stars**, *Hellenic Institute of Nuclear Physics*, 5th Workshop.

Scientific Publications

- 2019 **Constraints on the equation of state from the stability condition of neutron stars**, *P.S. Koliogiannis and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. *Astrophys Space Sci* (2019) **364**: 52. <https://doi.org/10.1007/s10509-019-3539-7>
- 2020 **Effects of the equation of state on the bulk properties of maximally rotating neutron stars**, *P.S. Koliogiannis and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. *Phys. Rev. C* **101**, 015805 (2020). <https://doi.org/10.1103/PhysRevC.101.015805>
- 2020 **Speed of sound constraints on maximally rotating neutron stars**, *Ch. Margaritis, P.S. Koliogiannis and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. *Phys. Rev. D* **101**, 043023 (2020). <https://doi.org/10.1103/PhysRevD.101.043023>
- 2020 **Speed of sound constraints from tidal deformability of neutron stars**, *A. Kanakis-Pegios, P.S. Koliogiannis and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. *Phys. Rev. C* **102**, 055801 (2020). <https://doi.org/10.1103/PhysRevC.102.055801>
- 2021 **Probing the nuclear equation of state from the existence of a $\sim 2.6 M_{\odot}$ neutron star: the GW190814 puzzle**, *A. Kanakis-Pegios, P.S. Koliogiannis, and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. *Symmetry* **2021**, **13**(2), 183. <https://doi.org/10.3390/sym13020183>
- 2021 **Thermodynamical Description of Hot, Rapidly Rotating Neutron Stars, Protoneutron Stars, and Neutron Star Merger Remnants**, *P.S. Koliogiannis and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. *The Astrophysical Journal* **912**, 69. <https://doi.org/10.3847/1538-4357/abe542>
- 2021 **Crust-core interface and bulk neutron star properties**, *Ch. Margaritis, P.S. Koliogiannis, and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. <https://arxiv.org/abs/2102.10948>

Peer Reviewed Proceedings

- 2019 **Effects on the Equation of State through the Uniform Rotation of Neutron Stars**, *P.S. Koliogiannis and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. *Bulg. J. Phys.* vol.46 no.4 (2019), pp. 303-312. <https://www.bjp-bg.com/paper1.php?id=1194>
- 2020 **Towards the Keplerian sequence: Realistic equations of state in rapidly rotating neutron stars**, *P.S. Koliogiannis and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. Hellenic Nuclear Physics Society. <http://dx.doi.org/10.12681/hnps.2987>
- 2020 **Equation of state of cold rapidly rotating neutron stars and the effects of the Keplerian sequence**, *P.S. Koliogiannis and Ch.C. Moustakidis*, Department of Theoretical Physics, Aristotle University of Thessaloniki. Hellenic Institute of Nuclear Physics, 5th Workshop. http://hinp.physics.uoi.gr/HINPW5/HINPW5_proceedings.pdf

Referee in Peer Reviewed International Journals

Journal **Astrophysics and Space Science, The European Physical Journal C (Particles and Fields).**

Secretarial Support

- 2019 **5th Workshop**, *Hellenic Institute of Nuclear Physics*, Physics Department, Aristotle University of Thessaloniki.

Scholarships

- 2011–2012 **Rewarding Scholarship**, *Physics Department*, Aristotle University of Thessaloniki.
description Digitization of the data of the "Evaluation of courses and teaching ability of faculty members" in the Physics department of the Aristotle University of Thessaloniki

Work Experience

2020–until
now **Teaching Physics in secondary education.**

Conferences

- 2014 **2nd Hellenic Institute of Nuclear Physics Workshop (HINPw2)**, *Aristotle University of Thessaloniki*.
- 2014 **10th CHERNE 2014 Workshop**, *10th Workshop on European Collaboration for Higher Education and Research in Nuclear Engineering and Radiological Protection*, Thessaloniki.
- 2014 **Aristotle and Contemporary Physics Celebrating the 60th Anniversary of CERN**, *European Organization for Nuclear Research (CERN) & Interdisciplinary Center for Aristotle Studies (DI.K.A.M.) of the Aristotle University of Thessaloniki (A.U.Th.)*, Aristotle University of Thessaloniki.
- 2014 **Developments in Regulatory Framework for Radiation Protection: New European Directive 59/2013 / EURATOM**, *Association of Physical Medicine of Greece*, Aristotle University of Thessaloniki.
- 2014 **Education of Physical Medicine at A.U.Th.**, *Association of Physical Medicine of Greece*, Aristotle University of Thessaloniki.
- 2016 **HEP2016 - Conference on Recent Developments in High Energy Physics and Cosmology**, *Hellenic Society for the Study of High Energy Physics*, Thessaloniki.
- 2017 **Parallel Programming and Optimization for Intel Architecture**, *Colfax International*, Web-based training.
- 2017 **Neutron Stars in the Era of Gravitational Waves**, *DAAD Winter School*, Aristotle University of Thessaloniki.

Interests

Reading Scientific Books/Magazines, Social Books
Music Pontic Lyra (Kemenche), Acoustic Guitar
Sports 3000m Steeplechase men, 5000m men, Basketball, Football