Fethi M. Ramazanoğlu

CONTACT INFORMATION

Associate Professor
Department of Physics
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RESEARCH INTERESTS

General relativity and physics of compact objects: alternative theories of gravity, numerical relativity, formal aspects of classical field theories, quantum gravity, black hole evaporation

ACADEMIC EXPERIENCE

Associate Professor of Physics — December 2023-current
Assistant Professor of Physics — June 2016-December 2023
Koç University, Istanbul, Turkey
Associate Professor title from the *Council of Higher Education (YÖK)* in December 2020.

Postdoctoral Research Associate — September 2014-June 2016
DAMTP, University of Cambridge, Cambridge, UK

Postdoctoral Research Associate — July 2012-August 2014
Department of Physics, Princeton University, Princeton, NJ USA

Graduate Fellow-Teaching/Research Assistant — September 2006-June 2012
Department of Physics, Princeton University, Princeton, NJ USA

Visiting Researcher — June 2007-September 2007
Institute for Neuroinformatics, Federal Technical Research Institute (ETH), Zurich, Switzerland

Undergraduate Researcher — June 2003-June 2006
Massachusetts Institute of Technology, Cambridge, MA USA

EDUCATION

Princeton University, Princeton, NJ, USA

Ph.D. in Physics, — June 2012

- Thesis Topic: *Evaporation of two dimensional black holes*
- Adviser: Prof. Frans Pretorius

Massachusetts Institute of Technology, Cambridge, MA, USA

B.S. in Physics, B.S. in Mathematics — June 2006

- Thesis Topic: *Scattering and Mesons*
- Adviser: Prof. Robert Jaffe
- Inductee of honor societies *Sigma Pi Sigma* and *Phi Beta Kappa*

PUBLICATIONS

See my Inspire page for a full list of publications with links to pdf files.

[1] D Doneva, Fethi M. Ramazanoğlu, H. O. Silva, T. P. Sotiriou, S. S. Yazadjiev
Scalarization
Reviews of Modern Physics, **in press**

[2] Andrew Coates, Fethi M. Ramazanoğlu
Treatments and placebos for the pathologies of effective field theories
Under review at Phys. Rev. Lett. gr-qc/2307.07743

[3] Kivanç İ. Ünlütürk, Andrew Coates, Fethi M. Ramazanoğlu
Loss of hyperbolicity and tachyons in generalized Proca theories
Phys. Rev. D 108, 044022 (2023) doi:10.1103/PhysRevD.108.044022

[4] Ekrem S. Demirboğa, Yakup Emre Şahin, Fethi M. Ramazanoğlu
Subtleties in constraining gravity theories with mass-radius data
Phys. Rev. D 108, 024028 (2023) doi:10.1103/PhysRevD.108.024028

[5] Andrew Coates, Fethi M. Ramazanoğlu
Pervasiveness of the breakdown of self-interacting vector field theories
Phys. Rev. D 107, 104036 (2023) doi:10.1103/PhysRevD.107.104036

[6] Andrew Coates, Fethi M. Ramazanoğlu
Coordinate singularities of self-interacting vector field theories
Phys. Rev. Lett. 130, 021401 (2023) doi:10.1103/PhysRevLett.130.021401

[7] Andrew Coates, Fethi M. Ramazanoğlu
Instrinsic pathology of self-interacting vector fields
Phys. Rev. Lett. 129, 151103 (2022) doi:10.1103/PhysRevLett.129.151103

[8] Semih Tuna, Kivanç İ. Ünlütürk, Fethi M. Ramazanoğlu
Constraining scalar-tensor theories using neutron star mass and radius measurements
Phys. Rev. D 105, 124070 (2022) doi:10.1103/PhysRevD.105.124070

[9] Ekrem S. Demirboğa, Andrew Coates, Fethi M. Ramazanoğlu
Instability of vectorized stars
Phys. Rev. D 105, 024057 (2022) doi:10.1103/PhysRevD.105.024057

[10] Hector O. Silva, Andrew Coates, Fethi M. Ramazanoğlu, Thomas P. Sotiriou
Ghost of vector fields in compact stars
Phys. Rev. D 105, 024046 (2022) doi:10.1103/PhysRevD.105.024046

[11] Fethi M. Ramazanoğlu
Various paths to the spontaneous growth of p-form fields
Turk.J.Phys. 43, 586 (2019) doi:10.3906/FIZ-1908-8

[12] Fethi M. Ramazanoğlu, Kıvanç İ. Ünlütürk
Disformal coupling can lead to spontaneous tensorization
Phys.Rev. D100, 084026 (2019) doi:10.1103/PhysRevD.100.084026

[13] Leor Barack et al.
Black holes, gravitational waves and fundamental physics: a roadmap
Class.Quant.Grav. 36, 143001 (2019) doi:10.1088/1361-6382/ab0587

[14] Fethi M. Ramazanoğlu
Spontaneous tensorization from curvature coupling and beyond
Phys.Rev. D99, 084015 (2019) doi:10.1103/PhysRevD.99.084015

[15] Fethi M. Ramazanoğlu
Jordan frame beyond scalar-tensor theories
Phys.Rev. D99, 044003 (2018) doi:10.1103/PhysRevD.99.044003

[16] Fethi M. Ramazanoğlu
Spontaneous growth of gauge fields in gravity through the Higgs mechanism
Phys.Rev. D98, 044013 (2018) doi:10.1103/PhysRevD.98.044013

[17] Fethi M. Ramazanoğlu
Spontaneous growth of spinor fields in gravity
Phys.Rev. D98, 044011 (2018) doi:10.1103/PhysRevD.98.044011

[18] Fethi M. Ramazanoğlu
Regularization of instabilities in gravity theories
Phys. Rev. D 97, 024008 (2018) doi:10.1103/PhysRevD.97.024008

[19] Fethi M. Ramazanoğlu
Spontaneous growth of vector fields in gravity
Phys. Rev. D 96, 064009 (2017) doi:10.1103/PhysRevD.96.064009

[20] Fethi M. Ramazanoğlu, Frans Pretorius
Spontaneous scalarization with massive fields
Phys. Rev. D 93, 064005 (2016) doi:10.1103/PhysRevD.93.064005

[21] Stephen L. Adler, Fethi M. Ramazanoğlu
Equations from static vacuum solutions arising from trace dynamics modifications to gravitation
Int. J. Mod. Phys. D 24, 1550011 (2015) doi:10.1142/S021827181550011X

[22] William E. East, Fethi M. Ramazanoğlu, Frans Pretorius
Black Hole Superradiance in Dynamical Spacetime
Phys. Rev. D 89, 061503 (2014) doi:10.1103/PhysRevD.89.061503

[23] William E. East, Fethi M. Ramazanoğlu, Frans Pretorius
A conformal thin-sandwich solver for generic initial data
Phys. Rev. D 86, 104053 (2012) doi:10.1103/PhysRevD.86.104053

[24] Abhay Ashtekar, Frans Pretorius, Fethi M. Ramazanoğlu
Surprises in the Evaporation of 2D Black Holes
Phys. Rev. Lett. 106, 161303 (2011) doi:10.1103/PhysRevLett.106.161303

[25] Abhay Ashtekar, Frans Pretorius, Fethi M. Ramazanoğlu
Evaporation of two-dimensional black holes
Phys. Rev. D 83, 044040 (2011) doi:10.1103/PhysRevD.83.044040

[26] Fethi M. Ramazanoğlu, Frans Pretorius
Two-dimensional quantum black holes: numerical methods
Class. Quantum Grav. 27 245027 (2010) doi:10.1088/0264-9381/27/24/245027
(selected as a highlight of 2010-2011)

[27] Fethi M. Ramazanoğlu
The approach to thermal equilibrium in the Caldeira-Leggett model
J. Phys. A: Math. Theor. 42 265303 (2009) doi:10.1088/1751-8113/42/26/265303

[28] Stephen L Adler, Fethi M. Ramazanoğlu
Photon-emission rate from atomic systems in the CSL model
J. Phys. A: Math. Theor. 40 13395 (2007) doi:10.1088/1751-8113/40/44/017

[29] Dezhe Z. Jin, Fethi M. Ramazanoğlu and H. Sebastian Seung
Intrinsic bursting enhances the robustness of a neural network model of sequence generation by avian brain area HVC
J. Comput. Neurosci. 23 283 (2007) doi:10.1007/s10827-007-0032-z

SELECTED INVITED TALKS

- "End of time in vector field theories" Istanbul Technical University Gravity Days, Istanbul, September 2022
- "Unwelcome instabilities in theories of gravity" Modals of gravity colloquium, Germany, December 2021 (Online)
- "Instabilities in alternative gravity theories" Max Planck Institute for Gravitational Physics, Potsdam, Germany, October 2018
- "Spontaneous Scalarization of Massive Fields", University of Aveiro, Aveiro Portugal, December 2015
- "Numerical relativity of Spontaneous Scalarisation", University of Cambridge, Cambridge UK, October 2014
- "Evaporation of 2-Dimensional Black Holes", Perimeter Institute for Theoretical Physics Strong Gravity Seminar, Waterloo, ON Canada, November 2012
- "Einstein Prize and New Methods for Old Problems in Gravitational Physics - Evaporation of 2-Dimensional Black Holes", American Physical Society (APS) April Meeting, Anaheim, CA USA, May 2011
- "Information loss in the CGHS model", International Loop Quantum Gravity Seminar, March 2010

GRANTS AND AWARDS

TL: Turkish liras. June 2016: 1TL = 0.34USD. December 2022: 1TL=0.054USD.

[1] TÜBİTAK 1001 Grant No:122F097 (2022-2025)
"Gravity's trial with neutron stars"
796800TL

[2] Science Academy of Turkey Young Scientist Award 2020
Comes with a monetary award of 40000TL

[3] TÜBİTAK 2515-COST Grant No:117F295 (2018-2020)
"Spontaneous Tensorization"
299200TL

[4] TÜBİTAK 3501 Grant No:117F111 (2018-2020)
"Investigating Hawking radiation in 1 space and 1 time dimensions"
367500TL

[5] TÜBİTAK KOLT Teaching Innovation Grant(2018)
Purchase of a telescope for teaching activities. 5000TL

[6] Co-Funded Brain Circulation Scheme, Grant No:116C033 (2016)
"Scalar fields in strong gravitation".
A one year stipend of €50,000, and research support of €7,200

[7] Joint Space-Science Institute (JSI) Postdoctoral Grant (2014) –declined
JSI, NASA and the University of Maryland
$65,000 stipend and $10,000 research support for two years, extendable to a third

[8] Princeton University Graduate Fellowship (2006)
Yearly stipend of $19,000

ACADEMIC SERVICE	Referee for Physical Review Letters, Physical Review D, Classical and Quantum Gravity, European Physical Journal C, International Journal of Modern Physics D, Astronomy and Space Science
TECHNICAL SKILLS	Programming: C, C++, Fortran, Matlab, Mathematica Numerical Methods: Parallel computation, finite difference methods, adaptive mesh refinement. Fluent in English, native in Turkish
PUBLIC OUTREACH	Instructor for the Turkish Physics Olympiad team Organizer of stargazing and amateur astronomy workshops for non-scientists Organizer of popular science talks on astrophysics and gravitation at Koç University