

Ciprian Sporea

Curriculum Vitae

West University of Timisoara
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Education

- 2013 - 2016 **West University of Timisoara (Romania)**
 Ph.D. in Theoretical Physics (*Summa Cum Laude*)
 Thesis title: *Fermion scattering on spherically symmetric Black Holes*
 Supervisor: Prof.univ.dr. Ion I. Cotăescu
- 2011 - 2013 **West University of Timisoara (Romania)**
 M.Sc. Degree in Astrophysics and Elementary Particles
- 2008 - 2011 **West University of Timisoara (Romania)**
 B.Sc. (Honours) Degree in Physics

Grants

- May 2018 UEFISCDI Grant : PN-III-P1-1.1-PD-2016-0842 (**Project Director**)
- Apr. 2020 Project title: Scattering Phenomena by Black Holes.
- June 2014 Contract nr. 11654/30.05.2014 within POSDRU/159/1.5/S/137750 grant
- Dec. 2015 I have won, by internal projects competition, a research grant to investigate the subject of my Ph.D. thesis on scattering phenomena by black holes.

Professional Experience - Teaching

at *Faculty of Physics - West University of Timisoara (Romania)*

- 2014 - 2018 I taught the weekly seminar/tutorial on *Classical Theoretical Mechanics* for 2nd year undergraduates.
- 2019 I taught the weekly course and seminar/tutorial on *Physics Complements II* for 2nd year undergraduates.

Professional Experience - Research

- Feb. 2017 **Research Assistant**
- Jul. 2020 *Faculty of Physics - West University of Timisoara (Romania)*
- Aug. 2017 Team member in the project: Computational Methods in Astrophysics and Space Sciences (COMASS), project nr. 181/20.07.2017 – ROSA: STAR program C3
- Dec. 2018
- Feb. 2014 Team member in the project: Computational Methods in Scientific Investigation of Space (COMISIS), project nr. 72/29.11.2013 – ROSA: STAR program C2
- Nov. 2016
- May 2015 **Research Internship**
- July 2015 *University of Wroclaw (Poland)*
 I have been working with Prof. A. Borowiec on Low energy Greybody factors for fermions emitted by a Schwarzschild-de Sitter black hole (one ISI paper published).

Research summary numbers

12 published articles in ISI Journals; 3 in ISI Conference Proceedings
 21 presentations at international conferences: 12 oral presentations and 9 posters
 95 citations (excluding self citations) - according to Web of Science Core Collection
 Hirsch index = 6

Distinctions, Awards and Honors

1. **Excellence in Ph.D. Research** - *Romanian affiliation: Physical and Chemical Sciences*, bi-annual Ad Astra awards for excellence in research, 2nd ed. (2016). <http://premiu.ad-astra.ro/?p=320>
2. **Excellence scholarship award** in 2010, 2011 and 2012 offered by the Faculty of Physics from West University of Timisoara.
3. I Received one of the two scholarships offered by *The Faraday Institute for Science and Religion* to attend the Short Course no. 21: Science, Religion and Atheism, held in Cambridge, United Kingdom, 30 March - 01 April, 2012.
4. *Excellence Diploma* attesting the quality of founding member of the West University of Timisoara *Elite Student Club* (2008).

Professional Skills

Mother tongue	<ul style="list-style-type: none"> • Romanian
Other language(s)	<ul style="list-style-type: none"> • English (Proficient user C1)
Computer skills	<ul style="list-style-type: none"> • Advanced knowledge in using LaTeX and Maple+GRTensorII. • Java, HTML5, C computer languages (level: beginners). • Python (level: advanced beginners). • Advanced knowledge in using Microsoft Office Package. • Basic knowledge in using Mathematica and Mathcad.

Academic administrative experience

2013 - 2015	West University of Timisoara (Romania) Member in the University & Physics Graduate (Ph.D.) School Board
2010 - 2011	West University of Timisoara (Romania) Senator student in the University Senate & Student member in the Physics Faculty Board

Memberships

1. Founding member of the West University of Timisoara Elite Students Club.
2. Founding member of the Physics Students Association (the Faculty of Physics from West University of Timisoara).
3. Member of the SEENET-MTP Network (<http://www.seenet-mtp.info/>).

Organizing

2021	Organizing Committee, TIM20-21 Physics Conference, 11-13 November 2021, UVT Timisoara.
2019	Organizing Committee, TIM19 Physics Conference, 29-31 May 2019, UVT Timisoara.
2016	Organizing Committee, The third seminar in the CERN – SEENET-MTP PhD training Program: Computational methods in Cosmology and General Relativity, 11-17 December 2016, UVT Timisoara.
2009 - 2010	Organizing Committee, Students' Conference "Science and Technology", UVT Timisoara.

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¹This CV was created using LaTeX

²Last update: October 2021

Research Publications

ISI Articles

1. **C.A. Sporea**, "Scattering of quantum fields by a MOG black hole", *Mod. Phys. Lett. A* **35**, No. 15, 2050121 (2020); arXiv:1812.09945.
2. **C.A. Sporea**, "Quasibound states of the Dirac field in Schwarzschild and Reissner-Nordström black hole backgrounds", *Mod. Phys. Lett. A* **34**, No. 39, 1950323 (2019); arXiv:1806.11462.
3. **C.A. Sporea**, "Fermion scattering by a class of Bardeen black holes", *Chinese Physics C*, Vol. **43**, no. 3 (2019) 035104; arXiv:1806.11462.
4. I.I. Cotăescu, **C.A. Sporea**, "Scattering of Dirac fermions by spherical massive bodies", *Eur. Phys. J. C* (2019) **79**:15; arXiv:1811.07723.
5. A. Wojnar, **C.A. Sporea**, A. Borowiec "A Simple Model for Explaining Galaxy Rotation Curves", *Galaxies* (2018) 6(3), 70; arXiv:1804.09620.
6. **C.A. Sporea**, A. Borowiec and A. Wojnar, "Galaxy Rotation Curves via Conformal Factors", *Eur. Phys. J. C* (2018) **78**:308; arXiv:1705.04131.
7. **C.A. Sporea**, "Scattering of massless fermions by Schwarzschild and Reissner-Nordstrom black holes", *Chinese Physics C*, Vol. **41**, no. 12 (2017) 123101; arXiv:1707.08374.
8. I.I. Cotăescu, C. Crucean and **C.A. Sporea**, "Partial wave analysis of the Dirac fermions scattered from Reissner - Nordström charged black holes", *Eur. Phys. J. C* (2016) **76**:413; arXiv:1601.03673.
9. **C.A. Sporea**, A. Borowiec, "Low energy Greybody factors for fermions emitted by a Schwarzschild-de Sitter black hole", *Int. J. Mod. Phys. D*, Vol. **25**, No. 4 (2016) 1650043; arXiv:1509.00831.
10. I.I. Cotăescu, C. Crucean and **C.A. Sporea**, "Partial wave analysis of the Dirac fermions scattered from Schwarzschild black holes", *Eur. Phys. J. C* (2016) **76**:102; arXiv:1409.7201.
11. **C.A. Sporea**, D.N. Vulcanov, "Using Maple + GRTensorII in teaching basics of General Relativity and Cosmology", *Rom. Rep. Phys.* **68**, 29 (2016); arXiv:1411.7969.
12. **C.A. Sporea**, "New modes for massive Dirac field in higher dimensional Black Holes", *Mod. Phys. Lett. A* **30**, 1550145 (2015); arXiv:1505.00470.

ISI Conference Proceedings

1. **C.A. Sporea**, "Scattering of spin half quantum fields by a Kiselev black hole", *AIP Conf. Proc.* **2218**, 050004 (2020); .
2. **C.A. Sporea**, "Greybody Factors for (4+n)-dim Schwarzschild-de Sitter Black Holes: spin 1/2 case", *AIP Conf. Proc.* **2071**, 020005 (2019); doi:10.1063/1.5090052.
3. G.S. Djordjevic, **C.A. Sporea**, D.N. Vulcanov, "On the Reverse Engineering Method in Cosmologies with Non-Minimally Coupled Scalar Field", *AIP Conf. Proc.* **1387**, 98 (2011); doi:10.1063/1.3647059.

Selected Presentations

Conference talks, seminars and colloquia

given by me:

- 2020 1. **C.A. Sporea**, "Dirac quasibound states in a charged black hole spacetime", *HEPAC 2020: Workshop On High Energy Physics, Astrophysics and Cosmology*, 3-5 February, Istanbul (Turkey).
- 2019 2. **C.A. Sporea**, "Fermionic quasibound states for Reissner-Nordstrom black holes", *10th MATHEMATICAL PHYSICS MEETING: School and Conference on Modern Mathematical Physics*, 9 - 14 September 2019, Belgrade (Serbia).
3. **C.A. Sporea**, "Scattering of spin half quantum fields by a Kiselev Black Hole", *TIM-19 Physics Conference*, 29-31 May 2019, Timisoara (Romania).
- 2018 4. **C.A. Sporea**, C. Crucean, I.I. Cotăescu "Scattering of Dirac fermions by Black Holes with Spherical Symmetry -analytical phase shifts-", *MG15: Marcel Grossmann Meeting*, 1-7 July 2018, Rome, (Italy).
5. **C.A. Sporea**, "Greybody coefficients for Schwarzschild de Sitter black holes in n -dimensions: spin $1/2$ fields", *The Joint Meeting on Quantum Fields and Nonlinear Phenomena*, 18 - 22 April 2018, Sinaia (Romania).
- 2017 6. **C.A. Sporea**, A. Borowiec, "Hawking radiation by Schwarzschild-de Sitter black holes: fermionic fields", *9th MATHEMATICAL PHYSICS MEETING: School and Conference on Modern Mathematical Physics*, 18 - 23 September 2017, Belgrade (Serbia).
- 2016 7. I.I. Cotăescu, C. Crucean and **C.A. Sporea**, "Fermion Scattering on Reissner-Nodstrom charged black holes ", *The Joint Meeting on Quantum Fields and Nonlinear Phenomena*, 9 - 13 March 2016, Sinaia (Romania).
- 2015 8. I.I. Cotăescu, C. Crucean and **C.A. Sporea**, "The scattering of Dirac fermions on Schwarzschild black holes - a partial wave analysis approach", *The Planck Scale II: XXXV Max Born Symposium*, 7 - 12 Sept. 2015, Wroclaw (Poland).
9. I.I. Cotăescu, C. Crucean and **C.A. Sporea**, "Scattering of massive fermions on Schwarzschild black holes", *20th International Summer School on Global Analysis and its Applications - General Relativity: 100 years after Hilbert*, 16-22 August, 2015, Stara Lesna, (Slovakia).
- 2014 10. I.I. Cotaescu, C. Crucean and **C.A. Sporea**, "Scattering of Dirac fermions in Schwarzschild geometry", *TIM-14 Physics Conference-Physics without frontiers*, 20–22 November 2014, Timisoara (Romania).
11. I.I. Cotaescu, C. Crucean and **C.A. Sporea**, "Elastic scattering of Dirac fermions on Schwarzschild black holes", *The Joint Meeting on Quantum Field Theory and Nonlinear Dynamics*, 24-28 Sept. 2014, Sinaia (Romania).
12. **C.A. Sporea**, "Conformal transformations in metric $f(R)$ theories of gravity", *SEENET-COSMO Seminar*, 12-15 Feb. 2014, Nis, (Serbia).

Poster Presentations

- 2019 1. **C.A. Sporea**, "Fermion Scattering by Spherically Symmetric Black Holes", *Kavli RISE Summer School on Gravitational Waves*, Cambridge (England), 23 - 27 September 2019.
2. **C.A. Sporea**, "Scattering of particles with spin 1/2 by MOG Black Holes", *COST Action CA16104 - Gravitational Waves, Black Holes and Fundamental Physics*, Athens (Greece), 21 - 24 January 2019.
- 2018 3. **C.A. Sporea**, "Scattering of spin 1/2 particles by Bardeen regular black holes", *The 5th Conference of the Polish Society on Relativity*, Wojanów (Poland), 24 - 27 September 2018.
4. **C.A. Sporea**, "Greybody Factors for n-dim Schwarzschild-de Sitter Black Holes: spin 1/2 case", *TIM-18 Physics Conference*, Timisoara (Romania), 24 - 26 May, 2018.
- 2017 5. **C.A. Sporea**, "Higher dimensional SdS black holes: fermionic Hawking radiation", *The 27th Workshop on General Relativity and Gravitation in Japan - JGRG27*, Saijo Higashi-hiroshima (Japan), 27 November - 01 December, 2017.
6. **C.A. Sporea**, "Scattering of massless fermions by black holes", *TIM-17 Physics Conference*, Timisoara (Romania). 25-27 May 2017.
7. **C.A. Sporea**, C. Crucean, I.I. Cotăescu, "Scattering of spin 1/2 waves by black holes: Analytic phase shifts", *641 WE-Heraeus-Seminar on 'Do Black Holes Exist? The Physics and Philosophy of Black Holes'*, Bad Honnef (Germany), 24 - 28 April, 2017.
- 2015 8. **C.A. Sporea**, A. Borowiec, "Low energy Greybody factors for fermions emitted by a Schwarzschild-de Sitter black hole", *600 WE-Heraeus-Seminar on 'Frontiers of Quantum Optics'*, Bad Honnef (Germany), 25 - 30 October, 2015.
- 2014 9. **C.A. Sporea**, Dumitru N. Vulcanov, "Minimally Coupled Scalar Field Cosmology in Higher-Order Theories of Gravity", *European Summer School 2014: From the mystery of mass to Nobel prize*, Strasbourg (France), 6-12 July, 2014.

Summer Schools

1. Kavli RISE Summer School on Gravitational Waves, 23 - 27 September 2019, Cambridge (England).
2. 20th International Summer School on Global Analysis and its Applications - General Relativity: 100 years after Hilbert, 16-22 August 2015, Stara Lesna, (Slovakia).
3. European Summer School 2014: From the mystery of mass to Nobel prize, 6-12 July 2014, Strasbourg (France).
4. 8th MATHEMATICAL PHYSICS MEETING: Summer School and Conference on Modern Mathematical Physics, 24-31 August 2014 Belgrade (Serbia).
5. JINR-Romanian International School on Small Angle Neutron Scattering and Complementary Methods for "Smart Materials", 25-27 November 2013, Timisoara (Romania).
6. 7th MATHEMATICAL PHYSICS MEETING: Summer School and Conference on Modern Mathematical Physics, 09-19 September 2012, Belgrade (Serbia).
7. Short Course no. 21: Science, Religion and Atheism, 30 March - 01 April 2012, The Faraday Institute for Science and Religion, Cambridge (UK).
8. Seminar on Shape optimization problems, 31 October - 04 November 2011, Timisoara (Romania).
9. Summer school: Cosmology and Particle Physics beyond the Standard Models, 21-28 August 2011, Donji Milanovac (Serbia).
10. European Summer Campus 2011: "Between Two Infinities: Particle Physics, Astroparticles and Cosmology", 06-13 July 2011, Strasbourg (France).
11. Summer School Practice in JINR Fields of Research, 05-25 July 2010, Dubna (Russia).

Public Presentations & Outreach

- 2020 1. **C.A. Sporea**, "The story of Black Holes", *Savnet Talks*, 22 September 2020, online webinar Timisoara (Romania).
- 2015 2. **C.A. Sporea**, "Despre stiinta din spatele bulelor (gigantice) de sapun (The science behind giant soap bubbles)"
 (a) *Zilele Stiintei – A.S.U.R.*, 17-18 October 2015, Bastion Timisoara (Romania).
 (b) *After School program for Primary School children*, April 2015, "Cartea de Nisip" Library (Romania).
3. **C.A. Sporea**, "Inceputurile Lumii: de la mit la realitate (The beginnings of the world: from myth to reality)", *Noaptea Cercetatorilor*, 25 September 2015, UVT Timisoara (Romania).
- 2014 4. **C.A. Sporea**, "Originile Universului - panel de discutii (The origins of the Universe - discussion panel)", *Saptamana studentului de la sociologie*, editia a IV-a, 10 Dec. 2014, UVT Timisoara (Romania).
5. **C.A. Sporea**, "Universul (The Universe)", *After School program for Primary School children*, 2 presentations in Aug. 2014, "Cartea de Nisip" Library (Romania).