

CV of the researcher

Arash Ranjbar

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Contact Details

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Scientific Education

- 01/09/2014 - 11/07/2018 PhD in Mathematical Physics of Fundamental Interactions,
Université Libre de Bruxelles (ULB), Brussels, Belgium;
Thesis title: “**String dualities and Gaugings of supergravity**”
[arXiv:1810.02793 [hep-th]]
Supervisors: Prof. Marc Henneaux and Prof. Jorge Zanelli
- 01/08/2013- 30/08/2014 PhD (cotutelle), Centro de Estudios Científicos (CECs), Valdivia, Chile
- 01/09/2008 - 17/01/2011 M. Sc., Gravitation, Shahid Beheshti University (SBU), Tehran, Iran;
Thesis title: “**Gravity near a Lifshitz Point**”
Supervisor: Prof. Hamid Reza Sepangi
- 01/09/2004 - 21/07/2008 B. Sc. in Physics at Ferdowsi University, Mashhad, Iran

Professional Experience

- 20/01/2024 - Present Scientific visitor at Institute Ruđer Bošković, Zagreb, Croatia
- I am involved in an active project on generalized global symmetries in mixed tensor theories. I have also continued working with external groups on supergravity, fractional quantum Hall effect, and non-relativistic gravity.
- 20/01/2020 - 19/01/2024 Postdoc at Institute Ruđer Bošković, Zagreb, Croatia
- In this position, my main responsibility was to continue research and collaboration with the members of the Institute. I was involved in three active projects on T-duality in worldsheet sigma models, generalized global symmetries in linearized gravity, and graviton as the Goldstone Bosons. I have also continued working with other groups on supergravity, higher spin gravity, and non-relativistic gravity.
- 01/09/2018 - 31/12/2019 Research associate at Université Libre de Bruxelles (ULB), Brussels, Belgium
- In this position, my main responsibility was to collaborate on a research program with Prof. Henneaux on finding the boundary action of 3D gravity in the presence of zero modes. Moreover, I have acted as a teaching assistant for a course on Group Theory.
- 01/09/2011 - 30/06/2013 Research assistant at Shahid Beheshti University (SBU), Tehran, Iran
- In this position, I have collaborated on two projects on torsion's effect on the collapse of black holes. Moreover, I was a teaching assistant in three courses: Electromagnetism, Calculus, and QFT.

Research Interests

- Lower dimensional (super)gravity, asymptotic symmetries, and boundary CFTs
- Blackholes
- Generalized global symmetries, anomalies, and dualities
- AdS/CFT correspondence and its applications
- Non-relativistic limit of QFT and gravity theories

Teaching Experience

- Teaching Assistant, Group Theory, Fall 2019.
- Teaching Assistant, QFT II; Fall 2012.
- Teaching Assistant, Calculus II; Spring 2012.
- Teaching Assistant, Electromagnetism I; Fall 2011.
- Teaching Assistant, Complex Analysis; Spring 2008.

List of Conferences and Seminars

Invited Speaker:

- 05/06/2023 - 09/06/2023 Mini-symposium on Physics and Geometry, Zagreb, Croatia.
<http://thphys.irb.hr/phygeo2023/>
- 13/05/2022 – 16/05/2022 Workshop on Higher Structures in Quantum Field and String Theory, Bayrischzell, Germany. <http://hep.itp.tuwien.ac.at/~miw/bzell2022/>

Invited Participant:

- 26/06/2023 – 21/07/2023 Simons Physics Summer Workshop, Stony Brook, USA.
<https://scgp.stonybrook.edu/archives/39181>
- 11/04/2023 – 14/04/2023 Workshop on “Progress on gravitational physics”, Brussels, Belgium.
http://www.solvayinstitutes.be/event/workshop/Topics_gravitational_physics_2023/Topics_gravitational_physics_2023.html

Organizing Committee:

- 11/09/2016 – 17/09/2016 XII Modave Summer School in Mathematical Physics, Modave, Belgium.
<https://ptm.ulb.be/Rencontres/ModaveXII/index.html>
Report of the school, see page 86 of the 2016 [Solvay Report](#).
- 10/09/2017 – 16/09/2017 XIII Modave Summer School in Mathematical Physics, Modave, Belgium.
<http://www.ulb.ac.be/sciences/ptm/pmif/Rencontres/ModaveXII/index.html>
Report of the school, see page 83 of the 2017 [Solvay Report](#).

Invited Seminar Speaker at Foreign Institutes (Past six years):

- 19/12/2023 On the asymptotic symmetry of 3-dimensional Chern-Simons (super)gravity, Institute for Research in Fundamental Physics (IPM), Tehran, Iran.
- 31/05/2022 Graviton as the Goldstone bosons of a spontaneous broken mixed tensor generalized global symmetry, ULB, Brussels, Belgium.
- 16/03/2021 Dualities in Gravity and Higher Gauge Theories, Institute for Research in Fundamental Physics (IPM), Tehran, Iran.
- 24/09/2018 BV-BRST Deformation and Gaugings of Supergravity, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam, Germany.
- 26/06/2018 BV-BRST Deformation and Gaugings of Supergravity, The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.

Publications

ORCID: [0000-0002-9571-2769](https://orcid.org/0000-0002-9571-2769)

To see the full list of publications and to access full-text see the following address:

<http://inspirehep.net/author/profile/A.Ranjbar.1>

Note: In all publications (with two exceptions) authors' names are ordered alphabetically as it is customary in the High Energy Physics community, and there is no significance of the relative positions of authors in their contributions.

1. W. Merbis, T. Neogi and A. Ranjbar, **Asymptotic dynamics of three-dimensional supergravity and higher spin gravity revisited**, [JHEP 06 \(2023\), 121](#) [[arXiv:2304.06761 \[hep-th\]](#)].
2. A. Chatzistavrakidis, G. Karagiannis and A. Ranjbar, **Duality, Generalized Global Symmetries and Jet Space Isometries**, [Universe 8 \(2021\) no.1, 10](#) [[arXiv:2112.00441 \[hep-th\]](#)].
3. A. Chatzistavrakidis, G. Karagiannis and A. Ranjbar, **Duality and higher Buscher rules in p-form gauge theory and linearized gravity**, [Fortschr. Phys. 2021, 2000135 \(2021\)](#) [[arXiv:2012.08220 \[hep-th\]](#)].
4. M. Henneaux, W. Merbis and A. Ranjbar, **Asymptotic dynamics of AdS3 gravity with two asymptotic regions**, [JHEP 03, 064 \(2020\)](#) [[arXiv:1912.09465 \[hep-th\]](#)].
5. A. Ranjbar and J. Zanelli, **Flat $so(p, q)$ -Connections for Manifolds of Non-Euclidean Signature**, [Class. Quant. Grav. 36 \(2019\) no.16, 167002](#) [[arXiv:1812.09515 \[hep-th\]](#)].
6. G. Barnich, N. Boulanger, M. Henneaux, B. Julia, V. Lekeu and A. Ranjbar, **Deformations of vector-scalar models**, [JHEP 02 \(2018\) 064](#) [[arXiv:1712.08126 \[hep-th\]](#)].
7. M. Henneaux, B. Julia, V. Lekeu and A. Ranjbar, **A note on “gaugings” in four space-time dimensions and electric-magnetic duality**, [Class. Quant. Grav. 35 \(2018\) 037001](#) [[arXiv:1709.06014 \[hep-th\]](#)].
8. M. Henneaux and A. Ranjbar, **Timelike duality, M' -theory and an exotic form of the Englert solution**, [JHEP 08 \(2017\) 012](#) [[arXiv:1706.06948 \[hep-th\]](#)].
9. J. P. Babaro, G. Giribet and A. Ranjbar, **Conformal field theories from deformations of theories with W_n symmetry**, [Phys. Rev. D 94 \(2016\) 086001](#) [[arXiv:1605.01933 \[hep-th\]](#)].
10. G. Giribet and A. Ranjbar, **Screening stringy horizons**, [Eur. Phys. J. C \(2015\) 75: 490](#) [[arXiv:1504.05044 \[hep-th\]](#)].
11. A. H. Ziaie, A. Ranjbar, H. R. Sepangi, **Trapped surfaces and nature of singularities in Lyra's geometry**, [Class. Quant. Grav. 32 \(2015\) 025010](#) [[arXiv:1306.2601 \[gr-qc\]](#)].
12. A. H. Ziaie, P. V. Moniz, A. Ranjbar, H. R. Sepangi, **Einstein-Cartan gravitational collapse of a homogeneous Weyssenhoff fluid**, [Eur. Phys. J. C \(2014\) 74: 3154](#) [[arXiv:1305.3085 \[gr-qc\]](#)].
13. A. Ranjbar, H. R. Sepangi and S. Shahidi, **Asymptotically Lifshitz Brane-World Black Holes**, [Annals of Physics 327 \(2012\) 3170–3181](#) [[arXiv:1108.4562 \[hep-th\]](#)].

Statistics based on [INSPIRE database](#):

Total number of publications in peer-reviewed journals=13

Total citation= 127

h-index =7

- 4 publications in JHEP (Impact factor 5.4)
- 2 publications in Class. Quant. Grav. (Impact factor 3.8)
- 2 publications in EPJC (Impact factor 4.4)
- 1 publication in PRD (Impact factor 5)
- 1 publication in Annals of Physics (Impact factor 3)
- 1 publication in Fortschr. Phys. (Impact factor 3.9)
- 1 publication in a special issue of Universe (Impact factor 2.8)

Computer Skills

Programming skills: Fortran, Python, Wolfram Mathematica, Shell Scripting,
Machine Learning, Neural Network,
Numpy, Tensorflow, Keras, Pandas, SymPy, ...

Other skills: Html, Access, Linux, Ubuntu, LATEX,
Microsoft Office tools (Excel, Word, PowerPoint)

Github: <https://github.com/arash-ranjbar>

Languages

- Persian (Native)
- English (Fluent)
- French (Basic)
- Spanish (Basic)