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PERSONAL DATA

Date of Birth: January, 1983
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Profiles: Scopus: 54924492100 h-index: 45, citations: 10589
Google Scholar: h-index: 63, citations: 16959
Research Gate: h-index: 51, , citations: 12522
Web of Science: AAD-9991-2019 h-index: 45, citations: 9507
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FORMAL EDUCATION

PhD. High Energy Physics:	Ghent University	2010 - 2015
Master of Physics:	Flemish Ministry of Education and Training - Belgium	2012
DEA of Physics:	DEA - Aleppo University	2004 - 2006
Bachelor in Physics:	Aleppo University	2000 - 2004

ACADEMIC/PROFESSIONAL PARTICULARS

- Field of Specialization:** Physics
- Highest Academic Qualification:**
Ph.D. Doctorate of Science – Physics, Department of Physics and Astronomy, Ghent University, Belgium – “Measurement of the cosmic ray energy spectrum between 500 TeV and 100 PeV with IceTop”
- Academic Editor:** ”Atmosphere” (ISSN 2073-4433)
- Guest Editor, Special Issue** ”Solar Radiation: Measurements and Model Studies – Progress and Perspectives”, Atmosphere, 2023, (ISSN 2073-4433)
- Guest Editor, Special Issue** ”High-Energy Particles in the Atmosphere: Results and Models

Studies—Status and Perspectives”, Atmosphere, 2024, (ISSN 2073-4433)

6. **Academic Reviews:** I reviewed research articles in different scientific journals: Atmosphere, Universe, Arab Journal of Basic and Applied Sciences, Security and Communication Networks, Mathematics, Symmetry, Evergreen, Aerospace, Information, International Journal of Environmental Research and Public Health (IJERPH), Remote Sensing, Journal of Intelligent and Fuzzy Systems, Journal of Marine Science and Engineering

7. **Conference committees:**

- Section Editor and Event Committee member, ”the 6th International Electronic Conference on Atmospheric Sciences”, ECAS5 2023.
- Local organization committee, ”The International Conference on Fractional Differentiation and its Applications”, ICFDA 2023.
- Young Investigator Award and Travel Award committees ”The 5th International Electronic Conference on Atmospheric Sciences”
- Scientific Committee Member, ”International Conference on Applied Sciences, Engineering, Technology and Management”, Dubai 2020.

8. **Research Grants and Academic Awards:**

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|-------------------------|-------------------------------------------|---------|
| (a) 2020 – 2021: | Internal Research Grant, Ajman University | \$4.00K |
| (b) 2020 – 2021: | Microsoft AI for Health - Research Grant | \$100K |
| (c) 2021 – 2022: | Internal Research Grant, Ajman University | \$5.00K |
| (d) 2022 – 2023: | Internal Research Grant, Ajman University | \$5.00K |
| (e) 2023 – 2024: | Internal Research Grant, Ajman University | \$5.00K |

(f) **Fall – 2020-21:** Faculty Exchange program, Ghent University

- **Excellence Research Award** - Top Researcher - Ajman University, 2022.
- **Top 3%** scientists in the world - Alper-Doger Scientific Index 2024
- **2^{de}** best scientist in Ajman University - Alper-Doger Scientific Index 2024
- **Best Paper Award**, The World Conference on Applied Sciences, Engineering & Technology, Dubai, 2019.

9. **Student Advising and Committees:**

- The Study of Strongly Interacting Matter Under Extreme Conditions at RHIC, SPS and LHC energies, Abdul Wali Khan University, Pakistan, PhD. [Maryam D/O] (In Progress - co-supervisor)
- Study of Nuclear Modification Factor of Charges Hadrons in High Energy Collisions, Abdul Wali Khan University, Pakistan, M.Sc. 2021 [Awais Ahmed] (co-supervisor)
- Study of Strange Particles in Proton-Proton Collisions at $\sqrt{s} = 200$ GeV. Abdul Wali Khan University, M.Sc. 2022 [Toheed Bibi] (co-supervisor)
- Murad badshah: Excitation function of various types of temperatures with centrality, energy, and rapidity in high energy collisions, Abdul Wali Khan university, Pakistan, PhD. [Toheed Bibi] (In Progress - co-supervisor)
- Study of Excitation Functions of Freeze-out Parameters in Hadron-Hadron and Nucleus-Nucleus Collisions at High Energies. Abdul Wali Khan University, Pakistan, PhD. [Sabiha Jamal] (In Progress - co-supervisor)

- Multi-particle Transverse Momentum Spectra from an Expanding Source in High Energy Collisions. Shanxi university, taiyuan, china, M.Sc. [Hilal Ahmad] (In Progress - co-supervisor)
- Multiplicity dependencies of midrapidity transverse momentum spectra of identified hadrons in pp collisions at $\sqrt{s} = 7$ TeV. Abdul Wali Khan University, M.Sc. [Majid Shehzad] (In Progress - co-supervisor)
- Study of Charge Particles in Hadron-Hadron and Nucleus-Nucleus Collisions in the Freeze-out State. Abdul Wali Khan University, M.Sc. [Zeeshan Khan] (In Progress - co-supervisor)
- Muon Counting with the IceTop Detector as a Probe of Cosmic Ray Composition. Ghent University, M.Sc. 2012 [Matthias Vraeghe] (supervisor)

10. Academic Service Committees:

- University Research Council - Member
- College Research Committee (CRC) - Chair
- College Effectiveness Committee (CEC) - Member
- Assessment and Continuous Improvement Committee (ACIC)/department - Chair
- Teaching and Learning Center - Member
- Accreditation Task Forces for ABET, CAA, and WASCUC
- Most of other committees, department level

11. Language Proficiency:

	Reading	Writing	Conversation
English:	Excellent	Excellent	Excellent
Arabic:	Excellent	Excellent	Excellent
French:	Very Good	Very Good	Very Good
Dutch:	Very Good	Very Good	Very Good

CAREER DETAILS

2024 - present:	Associate Professor, Physics	Ajman University
2019 - 2024:	Assistant Professor, Physics	Ajman University
2019 - 2023:	Nonlinear Dynamics Research Centre NDRC	Ajman University
Fall 2020 - 2021:	Visiting Assistant Professor, Exchange Program	Ghent University
2015 – 2018:	Postdoctoral Research Assistant	Ghent University
2010 – 2015:	R&D Scientist / Project Assistant – PhD	Ghent University
2006 – 2009:	Teaching Assistant	Damascus University

TEACHING EXPERIENCE

I have taught physics courses and lectures at different levels:

- Engineering Physics I&II
- General Physics I&II
- Astronomy

- Astroparticle Physics I&II
- Elementary Statistics
- Research Methodology

TECHNICAL SKILLS

1. Programming skills: C++, ROOT analysis software framework, Python, Linux Shell/bash Scripting
2. Data Camp Career Track: Data Scientist with Python (22 courses) 2018 - 2019:
 - Python for data science Toolbox
 - Importing, cleaning data with Python
 - Pandas Foundations, databases
 - Data Frames; merging and manipulating.
 - Data visualization, statistical thinking
3. Followed several workshops about curriculum design, mapping tools for alignment and improvement, and constructing high-quality course syllabus

CONFERENCES PRESENTATIONS

- Optimizing the zenith angle dependence of cosmic ray muons from Charm particles in the knee region: simulation study. Sep. 2022, Naples Italy
- Magnetic Field and the Electromagnetic Component of Cosmic Rays. March 2020, Dubai UAE
- Measurement of the cosmic ray energy spectrum with the IceTop detector. April 2017, Department of physics and Astronomy, Gent Belgium
- Cosmic ray energy spectrum with IceTop 81. March 2014, Banff Canada.
- Low energy showers with IceTop: 2014, ISCRA summer school, Erice Italy
- Muon counting study with SLCs. September 2011, IceCube Collaboration Meetings, Uppsala Sweden.
- 100 TeV – PeV Air Showers with IceTop: July 2013, 33rd international cosmic ray conference. Rio De Janeiro Brazil
- Cosmic ray energy spectrum extended towards low energy. September 2014, Geneva Switzerland.
- Low energy showers with IceTop. May 2013, Madison USA.
- SLCs Analysis and the Cosmic Ray Energy Spectrum. March 2012, Berkeley USA.

PUBLICATIONS

- [1] M. Waqas, M. Ajaz, A. Haj Ismail, et al. “Bulk properties of charged particles as a function of pseudo-rapidity in pp collisions”. In: *Eur. Phys. Jour. A* 60 (2024), p. 123. DOI: [10.1140/epjp/s13360-024-05227-7](https://doi.org/10.1140/epjp/s13360-024-05227-7).
- [2] M. Waqas, M. Ajaz, T. Saidani, et al. “Initial and final state temperature of K^* in Beam Energy Scan of Au–Au collisions at RHIC energies”. In: *Eur. Phys. Jour. Plus* 139 (2024), p. 415. DOI: [10.1140/epjp/s13360-024-05227-7](https://doi.org/10.1140/epjp/s13360-024-05227-7).
- [3] M. Waqas, W. Bietenholz, M. Bouzidi, et al. “Analyzing the correlation between thermal and kinematic parameters in various multiplicity classes within 7 and 13 TeV pp collisions”. In: *Journal of Physics G: Nuclear and Particle Physics* 51.7 (2024), p. 075102. DOI: [10.1088/1361-6471/ad489e](https://doi.org/10.1088/1361-6471/ad489e).
- [4] I. Khan, A. Qudus, M. Salouci, et al. “Centrality dependency of proton, deuteron, and triton’s temperatures in Au+Au collisions at 200 GeV”. In: *Scientific Reports* 14 (2024), p. 10299. DOI: [10.1038/s41598-024-55759-2](https://doi.org/10.1038/s41598-024-55759-2).
- [5] A. Sajid, M. Anjum, H. Younis, et al. “Assessment of Radon Concentration and Health Hazards in Natural Spring Water of a Sub-Himalayan District”. In: *Atmosphere* 15.8 (2024). DOI: [10.3390/atmos15080940](https://doi.org/10.3390/atmos15080940).
- [6] M. Parveen, I.A. Mahar, A. Tahira, et al. “Nickel oxide (NiO) nanostructures modified by rice straw extract phytochemicals for efficient urea oxidation in alkaline media using non-enzymatic sensing”. In: *Microchemical Journal* 204 (2024), p. 111188. DOI: <https://doi.org/10.1016/j.microc.2024.111188>.
- [7] F. Ali, R.H. Mari, E. Dawi, et al. “Development of Highly Sensitive and Selective Electrochemical Glucose Sensors Based on the Modification of the Surface, Structural, and Morphological Properties of ZnO Using Vitamin-B Complexes”. In: *Journal of The Electrochemical Society* 171.7 (2024), p. 077501. DOI: [10.1149/1945-7111/ad5b20](https://doi.org/10.1149/1945-7111/ad5b20).
- [8] M.A. Bhatti, E. Dawi, A. Tahira, et al. “UV photodegradation of methylene blue using microstructural carbon materials derived from citrullus colocynthis”. In: *Frontiers in Materials* 11 (2024). DOI: [10.3389/fmats.2024.1407485](https://doi.org/10.3389/fmats.2024.1407485).
- [9] M. Waqas, G.X. Peng, A. Haj Ismail, et al. “Excitation function of thermal freeze-out parameters and their correlations from strange hadrons spectra in Au–Au collision at 54.4 GeV”. In: *Chinese Journal of Physics* 87 (2024), pp. 256–267. DOI: <https://doi.org/10.1016/j.cjph.2023.11.026>.
- [10] I.U. Haq, A. Ali, A. AbdelKader, et al. “Ground state structure and optoelectronic properties of novel quasi-2D layered halide perovskites CsPb₂X₅ (X= Cl, Br, I) via first principle calculations”. In: *Materials Science in Semiconductor Processing* 176 (2024), p. 108326. DOI: <https://doi.org/10.1016/j.mssp.2024.108326>.
- [11] A. Abdelkader, E.A. Dawi, and A. Haj Ismail. “Exploring the Topological Correlations within Two-Dimensional Foam Structures”. In: *Evergreen* 11 (2024), pp. 225–233. DOI: <https://doi.org/10.5109/7172259>.
- [12] G. Nawab, A.U. Rahman, I.U. Haq, et al. “Structural and optoelectronic properties of 2D halide perovskites Cs₂MBr₄ (M = Zn, Cd, Hg): a first principle study”. In: *Optical and Quantum Electronics* 56.5 (2024). DOI: [10.1007/s11082-024-06710-2](https://doi.org/10.1007/s11082-024-06710-2).
- [13] M. Waqas, A. Haj Ismail, H.I. Alrebdi, et al. “Centrality and System Size Dependence among Freezeout Parameters and the Implications for EOS and QGP in High-Energy Collisions”. In: *Entropy* 25.12 (2023). ISSN: 1099-4300. URL: <https://www.mdpi.com/1099-4300/25/12/1586>.
- [14] M. Ajaz, A. Haj Ismail, M. Waqas, et al. “Multiplicity Dependence of the Freeze-Out Parameters in Symmetric and Asymmetric Nuclear Collisions at Large Hadron Collider Energies”. In: *Symmetry* 15.11 (2023). DOI: [10.3390/sym15112063](https://doi.org/10.3390/sym15112063).
- [15] M. Badshah, A. Haj Ismail, M. Waqas, et al. “Excitation Function of Freeze-Out Parameters in Symmetric Nucleus-Nucleus and Proton-Proton Collisions at the Same Collision Energy”. In: *Symmetry* 15.8 (2023). DOI: [10.3390/sym15081554](https://doi.org/10.3390/sym15081554).

- [16] A. Haj Ismail. “Optimizing the zenith angle dependence of cosmic ray muons from Charm particles in the knee region: simulation study”. In: *Journal of Physics: Conference Series* 2429.012013 (2023). DOI: [10.1088/1742-6596/2429/1/012013](https://doi.org/10.1088/1742-6596/2429/1/012013).
- [17] M. Ajaz, A. Haj Ismail, M. Waqas, et al. “Tuning Monte Carlo Models to Reproduce Cosmic Radiation Interacting with the Earths Atmosphere”. In: *Atmosphere* 14.6 (2023). DOI: [10.3390/atmos14061028](https://doi.org/10.3390/atmos14061028).
- [18] M. Ajaz, A. Haj Ismail, M. Ullah Mian, et al. “Charged Particles Transverse Momentum and Pseudorapidity Distribution in Hadronic Collisions at LHC Energies”. In: *Entropy* 25.3 (2023). DOI: [10.3390/e25030452](https://doi.org/10.3390/e25030452).
- [19] A. Haj Ismail, E.A. Dawi, N. Almokdad, et al. “Estimation and Comparison of the Clearness Index using Mathematical Models - Case study in the United Arab Emirates”. In: *Evergreen* 10 (2023), pp. 863–869. DOI: [10.5109/6792841](https://doi.org/10.5109/6792841).
- [20] M. Ajaz, A. Haj Ismail, H.I. Alrebdi, et al. “Simulation Studies of Track-Based Analysis of Charged Particles in Symmetric Hadron-Hadron Collisions at 7 TeV”. In: *Symmetry* 15.3 (2023). DOI: [10.3390/sym15030618](https://doi.org/10.3390/sym15030618).
- [21] M. Ajaz, M. U. Ashraf, A. Haj Ismail, et al. “Model studies of V^0 production ratios in pp collisions at $\sqrt{s} = 0.2, 0.9$, and 7 TeV”. In: *Eur. Phys. J. Plus* 138.1 (2023), p. 14. DOI: [10.1140/epjp/s13360-022-03603-9](https://doi.org/10.1140/epjp/s13360-022-03603-9).
- [22] S. Mastoi, M.A. Bhatti, A. Tahira, et al. “Efficient photodegradation of malachite green in sunlight using ZnO nanostructures modified with pomegranate peel”. In: *J Mater Sci: Mater Electron* 34.1943 (2023). DOI: [10.1007/s10854-023-11329-2](https://doi.org/10.1007/s10854-023-11329-2).
- [23] S. Mangrio, A. Tahira, I.A. Mahar, et al. “Electrochemical non-enzymatic urea sensing using polyvinylpyrrolidone derived highly electrocatalytic NiCo₂O₄ nanowires”. In: *Journal of Nanoparticle Research* 25.195 (2023). DOI: [10.1007/s11051-023-05844-w](https://doi.org/10.1007/s11051-023-05844-w).
- [24] A.G. Solangi, A. Tahira, B. Waryani, et al. “Green-Mediated Synthesis of NiCo₂O₄ Nanostructures Using Radish White Peel Extract for the Sensitive and Selective Enzyme-Free Detection of Uric Acid”. In: *Biosensors* 13.8 (2023). DOI: [10.3390/bios13080780](https://doi.org/10.3390/bios13080780).
- [25] A.G. Solangi, A. Tahira, A.S. Chung, et al. “Enhanced electro active properties of NiCo₂O₄ nanostructures using garlic extract for the sensitive and selective enzyme-free detection of ascorbic acid”. In: *J Mater Sci: Mater Electron* 34.1549 (2023). DOI: [10.1007/s10854-023-10937-2](https://doi.org/10.1007/s10854-023-10937-2).
- [26] M.A. Jakhrani, M.A. Bhatti, A. Tahira, et al. “Biogenic Preparation of ZnO Nanostructures Using Leafy Spinach Extract for High-Performance Photodegradation of Methylene Blue under the Illumination of Natural Sunlight”. In: *Molecules* 28.6 (2023). DOI: [10.3390/molecules28062773](https://doi.org/10.3390/molecules28062773).
- [27] M. Waqas, A. AbdelKader, M. Ajaz, et al. “Dependence of Freeze-Out Parameters on Collision Energies and Cross-Sections”. In: *Universe* 9.1 (2023). ISSN: 2218-1997. DOI: [10.3390/universe9010044](https://doi.org/10.3390/universe9010044).
- [28] A. Hanan, M.Y. Solangi, A. Jaleel laghari, et al. “PdO@CoSe₂ composites: efficient electrocatalysts for water oxidation in alkaline media”. In: *RSC Adv.* 13 (1 2023), pp. 743–755. DOI: [10.1039/D2RA07340D](https://doi.org/10.1039/D2RA07340D).
- [29] M. Ajaz, M.U. Ashraf, M. Waqas, et al. “Model studies of V^0 production ratios in pp collisions at $\sqrt{s}=0.2,0.9$, and 7 TeV”. In: *Eur. Phys. J. Plus* 138.14 (2023). DOI: [10.1140/epjp/s13360-022-03603-9](https://doi.org/10.1140/epjp/s13360-022-03603-9).
- [30] L.L. Li and A. Haj Ismail. “Study of Bulk Properties of Strange Particles in Au+Au Collisions at sNN = 54.4 GeV”. In: *Entropy* 24.12 (2022). DOI: [10.3390/e24121720](https://doi.org/10.3390/e24121720).
- [31] M. Waqas, L.M. Liu, A. Haj Ismail, et al. “Observation of non-homogeneous scenarios for different temperatures in hadron(nucleus)-nucleus collisions at RHIC and LHC energies”. In: *Chinese Journal of Physics* 80 (2022), pp. 206–228. ISSN: 0577-9073. DOI: [10.1016/j.cjph.2022.09.016](https://doi.org/10.1016/j.cjph.2022.09.016).
- [32] M. Waqas, G. X. Peng, A. Haj Ismail, et al. “Analyses of the collective properties of hadronic matter in Au-Au collisions at 54.4 GeV”. In: *Phys. Rev. D* 106.7 (2022), p. 075009. DOI: [10.1103/PhysRevD.106.075009](https://doi.org/10.1103/PhysRevD.106.075009).
- [33] A. Haj Ismail. “Monte Carlo simulation of the cosmic muon charge ratio”. In: *Kuwait J.Sci.* 49.1 (2022), pp. 1–8. DOI: [10.48129/kjs.v49i1.11497](https://doi.org/10.48129/kjs.v49i1.11497).

- [34] T. Jwaid, R. Mesiar, and A. Haj Ismail. “A generalization of quasi-homogenous copulas”. In: *Fuzzy Sets and Systems* 441 (2022), pp. 310–320. DOI: [10.1016/j.fss.2021.09.021](https://doi.org/10.1016/j.fss.2021.09.021).
- [35] A. Haj Ismail. “Prediction of global solar radiation from sunrise hours using regression functions”. In: *Kuwait J.Sci.* 49.3 (2022), pp. 1–8. DOI: [10.48129/kjs.15051](https://doi.org/10.48129/kjs.15051).
- [36] M. Waqas, G.X. Peng, A. Haj Ismail, et al. “Particle species and energy dependencies of freeze-out parameters in high-energy proton–proton collisions”. In: *Eur. Phys. J. Plus* 137.9 (2022), p. 1041. DOI: [10.1140/epjp/s13360-022-03189-2](https://doi.org/10.1140/epjp/s13360-022-03189-2).
- [37] M. Waqas, G. Xiong Peng, A. Haj Ismail, et al. “Investigation of the freeze-out parameters in B–B, O–O, Ca–Ca and Au–Au collisions at 39 GeV”. In: *The European Physical Journal Plus* 137.9 (2022). DOI: [10.1140/epjp/s13360-022-03191-8](https://doi.org/10.1140/epjp/s13360-022-03191-8).
- [38] M. Waqas, G. -X. Peng, M. Haj Ismail A. Ajaz, et al. “Extraction of different temperatures and kinetic freeze-out volume in high energy collisions”. In: *J. Phys. G* 49.9 (2022), p. 095102. DOI: [10.1088/1361-6471/ac6a00](https://doi.org/10.1088/1361-6471/ac6a00).
- [39] M. Ajaz, A. Haj Ismail, M. Waqas, et al. “Pseudorapidity dependence of the bulk properties of hadronic medium in pp collisions at 7 TeV”. In: *Sci. Rep.* 12.1 (2022), p. 8142. DOI: [10.1038/s41598-022-11685-9](https://doi.org/10.1038/s41598-022-11685-9).
- [40] M. Waqas, G. X. Peng, A. Haj Ismail, et al. “Decoupling of non-strange, strange and multi-strange particles from the system in Cu–Cu, Au–Au and Pb–Pb collisions at high energies”. In: *Chin. J. Phys.* 77 (2022), pp. 1713–1722. DOI: [10.1016/j.cjph.2022.03.034](https://doi.org/10.1016/j.cjph.2022.03.034).
- [41] M. Ajaz, M. Waqas, A. Haj Ismail, et al. “Bulk properties of the medium in comparison with models’ predictions in pp collisions at 13 TeV”. In: *Eur. Phys. J. Plus* 137.5 (2022), p. 592. DOI: [10.1140/epjp/s13360-022-02805-5](https://doi.org/10.1140/epjp/s13360-022-02805-5).
- [42] M. Ajaz, A. Khubrani, A. Haj Ismail, et al. “Collective properties of hadrons in comparison of models prediction in pp collisions at 7 TeV”. In: *Results Phys.* 36 (2022), p. 105433. DOI: [10.1016/j.rinp.2022.105433](https://doi.org/10.1016/j.rinp.2022.105433).
- [43] M. Waqas, A. Haj Ismail, Muhammad Ajaz, et al. “Excitation Function of Kinetic Freeze-Out Parameters at 6.3, 17.3, 31, 900 and 7000 GeV”. In: *Universe* 8.2 (2022), p. 138. DOI: [10.3390/universe8020138](https://doi.org/10.3390/universe8020138).
- [44] A. Haj Ismail, F.H. Jneed, and E.A. Dawi. “Investigation of the Structural, Optical, and Electrical Characterization of FeO-Doped ZnO Nanoparticles”. In: *Russ. Phys. J.* 64 (2022), pp. 1850–1856. DOI: [10.1007/s11182-022-02527-2](https://doi.org/10.1007/s11182-022-02527-2).
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