

Curriculum Vitae

SOEBUR RAZZAQUE, PHD

Contact Information

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Professional Profile

- Senior academic in an internationally-renowned university (top 500 globally)
- Proven track records in publishing high-impact research and obtaining research funding
- Consistently successful in mentoring postgraduate students and postdoctoral fellows
- Enthusiastic lecturer at the undergraduate and postgraduate levels
- Effective communicator with relevant administrative, planning and organizational skills

Career Path

- **Professor** 2013-present
Department of Physics
University of Johannesburg, Auckland Park, South Africa
- **Director** 2018-present
University of Johannesburg Centre for Astro-Particle Physics (CAPP)
- **Research Professor** 2017-2018
Department of Physics and Astronomy
George Washington University, Washington, DC, USA
- **Research Associate Professor** 2011-2012
School of Physics, Astronomy and Computational Sciences
George Mason University, Fairfax, Virginia, USA
- **National Research Council Research Associate** 2008-2010
Space Science Division
US Naval Research Laboratory, Washington, DC, USA
- **Postdoctoral Research Associate** 2002-2007
Department of Astronomy and Astrophysics, Department of Physics
Pennsylvania State University, University Park, Pennsylvania, USA

Academic Qualifications

- **PhD in Physics** 2002
University of Kansas, Lawrence, Kansas, USA
- **Diploma in High Energy Physics** 1997
International Center for Theoretical Physics, Trieste, Italy
- **MSc in Physics** 1996
University of Dhaka, Bangladesh
- **BSc in Physics** 1994
University of Dhaka, Bangladesh

Research Areas and Impact

- **Theory and computation:** Astro-particle Physics, High-energy Astrophysics
- **H-index:** 66 (NASA ADS) 70 (Google Scholar) on July 4, 2019
- **Publications :** <https://scholar.google.com/citations?user=kf-0WDwAAAAJ&hl=en>

Research Grants

Listed grants of which I am the Principle Investigator and/or Grant Holder

NRF – National Research Foundation, South Africa; SKA – Square Kilometre Array, South Africa Project Office; NASA – National Aeronautics and Space Administration, USA

- University of Johannesburg Research Council Grant 2018: Centre for Astro-Particle Physics
S. Razzaque (Grant Holder and Director), Grant amount: **ZAR 1,800,000/3 years**
- NRF Grant for 2018: Competitive Programme for Rated Researchers
Astrophysics and Physics of High-energy Neutrino and Gravitational Wave Sources
S. Razzaque (Grant Holder), Grant amount: **ZAR 530,000/3 years**
- NRF Grant for 2015: Multi-Wavelength Astronomy Research Programme
Observing optical and VHE emission from Gamma-Ray Bursts to constrain the blast-wave model
S. Razzaque (Grant Holder), Grant amount: **ZAR 535,000/1 year**
- SKA Human Capital Development: 2014
S. Razzaque (Grant Holder), Grant amount: **ZAR 935,000/2 year**
- NRF Grant for 2014: The Blue Skies Research Programme
Astronomy with High-Energy Neutrinos
S. Razzaque (Grant Holder), Grant amount: **ZAR 163,000/1 year**
- NRF Grant for 2014: Competitive Programme for Rated Researchers
Astrophysics and Physics of High-energy Neutrinos
S. Razzaque (Grant Holder), Grant amount: **ZAR 695,000/3 years**
- NRF Grant for 2014: Multi-Wavelength Astronomy Research Programme
Modeling multi-wavelength data from Gamma Ray Bursts
S. Razzaque (Grant Holder), Grant amount: **ZAR 380,000/3 years**
- NASA Fermi Cycle 4 Guest Investigator Program (2011)
Modeling X-ray to Gamma-ray Light Curves of Nova 2010 in V407 Cygni and Future Gamma-ray Novae
S. Razzaque (Principal Investigator), Grant amount: **USD 160,000/2 years**
- NASA Fermi Cycle 3 Guest Investigator Program (2010)
Gamma Rays Absorbed by the EBL and Cascade Radiation Contribution in Blazar and GRB Spectra
S. Razzaque (Principal Investigator), Grant amount: **USD 65,000/1 year**
- NASA Fermi Cycle 2 Guest Investigator Program (2009)
Probing the Gamma Ray Opacity of the Universe using the Highest Energy Fermi Data
S. Razzaque (Principal Investigator), Grant amount: **USD 68,000/1 year**

Teaching Experience

- | | |
|---|-----------|
| • Classical Electrodynamics (Postgraduate)
Department of Physics, University of Johannesburg | 2018-2019 |
| • General Relativity (Postgraduate)
Department of Physics, University of Johannesburg | 2016-2018 |
| • Radiation Astrophysics (Postgraduate)
Department of Physics, University of Johannesburg | 2014-2018 |
| • Mathematical Methods in Physics (Postgraduate)
Department of Physics, University of Johannesburg | 2013-2016 |
| • Static and Dynamic Electromagnetism (2nd year undergraduate)
Department of Physics, University of Johannesburg | 2014-2016 |
| • 27th Chris Engelbrecht International Summer School
Tshipise, Limpopo, South Africa (10-hour lecture) | 2016 |
| • Fermi Summer School
Lewes, Delaware, USA | 2012 |

- **Fermi-Swift GRB Data Analysis Workshop** 2010
NASA Goddard, Green Belt, Maryland, USA

Student Supervision and Postdoctoral Training

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|--------------------------------------|-----------------------------------|--------------|
| • Mr. Feraol Fana Dirirsa | (Doctoral student, completed) | 2015-2018 |
| • Ms. Jessymol Thomas | (Doctoral student, completed) | 2014-2017 |
| • Mr. Lutendo Nayadzani | (Masters student) | 2018-present |
| • Mr. Mfuphi Ntsatsha | (Masters student) | 2018-present |
| • Ms. Nomthendeleko Motha | (Masters student) | 2019-present |
| • Mr. Oscar Teixeira | (Masters student) | 2019-present |
| • Ms. Nomthendeleko Motha | (B.Sc. Honors student, completed) | 2018 |
| • Mr. Lutendo Nayadzani | (B.Sc. Honors student, completed) | 2017 |
| • Mr. Abey Maheso | (B.Sc. Honors student, completed) | 2017 |
| • Mr. Mfuphi Ntsatsha | (B.Sc. Honors student, completed) | 2017 |
| • Mr. Nemifulwi Murendeni | (B.Sc. Honors student, completed) | 2015 |
| • Mr. Brandon Panos | (B.Sc. Honors student, completed) | 2014 |
| • Dr. Ushak Rahaman | (Postdoctoral research fellow) | 2019-present |
| • Dr. Luis Salvador Miranda Palacios | (Postdoctoral research fellow) | 2017-present |
| • Dr. Jagdish C Joshi | (Postdoctoral research fellow) | 2016-2019 |
| • Dr. Aquib Moin | (Postdoctoral research fellow) | 2015-2016 |
| • Dr. Reetanjali Moharana | (Postdoctoral research fellow) | 2014-2016 |
| • Dr. Richard Britto | (Postdoctoral research fellow) | 2013-2015 |

Scientific Affiliations and Services

- Executive Committee Member of the SA-GAMMA Consortium (South African Gamma-Ray Astronomy Programme) 2015-present
- Member of the Faculty of Science Research Committee, University of Johannesburg 2014-present
- Member of the Cherenkov Telescope Array (CTA) Publication and Speakers Office (SAPO) 2019-present
- Member of the Cherenkov Telescope Array (CTA) Consortium 2015-present
- Coordinator of the Gamma-Ray Burst Science Working Group Fermi Large Area Telescope (Fermi-LAT) Collaboration 2016-2017
- Member of the Fermi Large Area Telescope (Fermi-LAT) Collaboration 2009-present
- Member of the KM3NeT Neutrino Observatory Publication Committee 2019-present
- Member of the KM3NeT Neutrino Observatory Collaboration 2017-present
- Associate member of the IceCube Neutrino Observatory Collaboration 2013-present
- Member of the American Physical Society 2000-present
- Member of the American Astronomical Society 2017-present
- Member of the South African Institute of Physics 2015-present
- Co-chair of the Scientific Organizing Committee and Co-chair of the Local Organizing Committee of the 9th International Fermi Symposium, Johannesburg, 19 March – 3 April 2020.
- Member of the Scientific Organizing Committee of the 29th Texas Symposium, Cape Town, South Africa, 3-8 December 2017
- Member of the Scientific Organizing Committee of the High Energy Astrophysics in Southern Africa (HEASA) annual conference series, 2014-present
- Chair of the Local Organizing Committee of the 3rd Annual Conference on High Energy Astrophysics in Southern Africa (HEASA), Johannesburg, 18-20 June 2015
- Convener of the Neutrino Physics session of the TeV Particle Astrophysics 2012 Conference, Mumbai, India, 10-14 December 2012

- Member of the Scientific Organizing Committee of the Gamma Ray Bursts 2010 Conference, Annapolis, Maryland, 1-4 November 2010
- Chief Editor of the Proceedings of the 2015 and 2016 Annual Conference on High Energy Astrophysics in Southern Africa (HEASA)
- Reviewer of various NASA (USA), National Science Foundation (USA), German Research Foundation (DFG) and National Research Foundation (South Africa) research proposals
- Referee of the *Physical Review Letters*; *Physical Review D*; *Astrophysical Journal*; *Monthly Notices of the Royal Astronomical Society*; *Astronomy & Astrophysics*; *Astroparticle Physics*; *Frontiers in Physics*, *Journal of Cosmology and Astroparticle Physics*; *Nuclear Physics B*; *Journal of High-energy Astrophysics*; *Science Magazine*

Awards

- Bruno Rossi Prize 2011 by the High-Energy Astrophysics Division of American Astronomical Society for the Fermi-LAT collaboration, USA
- National Research Council (NRC) Research Associateship (2008-2010), National Academy of Sciences, USA
- Best Poster Award by Chris Quigg Foundation in “TeV Particle Astrophysics Conference”, 2005, Fermi National Accelerator Laboratory, USA
- Scholarship and Travel Award to attend the “Diploma Program in High Energy Physics”, 1996-1997, International Centre for Theoretical Physics, Trieste, Italy

Recent Invited Presentations

1. ICTP-IITB Neutrino Workshop, Indian Institute of Technology Bombay, Mumbai, India, 14-18 December 2018
2. PANE 2018: Advanced Workshop on Physics of Atmospheric Neutrinos, Abdus Salam ICTP, Trieste, Italy, 28 May - 1 June 2018
3. NuHoRIZon VII: Neutrinos in Physics, Astrophysics and Cosmology, Harish-Chandra Research Institute, Allahabad, India, 21-23 February 2018
4. XXVIII International Symposium on Lepton Photon Interactions at High Energies, Guangzhou, China, 7-12 August 2017
5. Fermi Open Science Session, CERN, Switzerland, 27-31 April 2017
6. Cosmology with Large Surveys – The first South Africa – China bilateral workshop, Durban, South Africa, 19-26 November 2016
7. XXVII International Conference on Neutrino Physics and Astrophysics (NEUTRINO 2016), London, UK, 4-9 July 2016
8. Workshop on Perspectives on the Extragalactic Frontier: from Astrophysics to Fundamental Physics, ICTP, Trieste, Italy, May 2-6, 2016
9. High Energy Astrophysics in Southern Africa (HEASA) 2015, Johannesburg, South Africa, June 18-20, 2015
10. Colloquium, Harbeesthoek Radio Astronomical Observatory, South Africa, May 13, 2015
11. Department of Physics Seminar, George Washington University, Washington DC, USA, May 7, 2015
12. Seminar, Institute de Fisica Corpuscular (IFIC), University of Valencia, Spain, March 26, 2015
13. Colloquium, Department of Physics, University of Nevada Las Vegas, USA, December 12, 2014
14. DSU 2014: Dark Side of the Universe, University of Cape Town, Cape Town, South Africa, 17-21 November 2014
15. NOW 2014: Neutrino Oscillation Workshop, Conca Specchiulla (Otranto, Lecce), Italy, 7-14 September 2014
16. VHEPU 2014: Very High Energy Phenomena in the Universe, Quy Nhon, Vietnam, 3-9 August 2014
17. Workshop on the Future of Dark Matter Astro-Particle Physics: Insights and Perspectives, Abdus Salam ICTP, Trieste, Italy, 8-11 October 2013
18. Astronomy Town Meeting, Cape Town, South Africa, 1-2 August 2013

19. Multi-Messenger Transient Astrophysics Workshop, KIAA, Peking University, Beijing, China, 6-10 May 2013
20. Axion Cosmophysics, KEK Theory Center, Tsukuba, Japan, 6-9 November 2012
21. NNN 12, Workshop on Next generation Neutrino and Nucleon detectors, Fermi National Accelerator Laboratory, Illinois, USA, 4-6 October 2012
22. PACIFIC 2012, a symposium on Particle Astrophysics and Cosmology Including Fundamental InteraCtions, Moorea, French Polynesia, 1-7 September 2012
23. Nuclear Astrophysics Seminar, Ohio University, Athens, USA, 18 April 2012
24. Inaugural Workshop on Astrophysical Multimessenger Observatory Network (AMON), Penn State University, State College, USA, 1-2 October 2011
25. SNAC 2011: Sterile Neutrinos at the Crossroads, Virginia Tech, Blacksburg, USA, 25-28 September 2011
26. CCAPP Seminar, Ohio State University, Columbus, USA, 15 July 2011
27. High Energy Physics Seminar, Pennsylvania State University, State College, USA, 11 July 2011
28. NUSKY 2011: Looking at the Neutrino Sky, Trieste, Italy, 20-24 June 2011
29. Physics and Astronomy Colloquium, University of Kansas, Lawrence, USA, 29 November 2010
30. CRIS 2010: Cosmic Ray International Seminar, Catania, Italy, 13-17 September 2010
31. SciNeGHE 2010: 8th Workshop on Science with the New Generation of High Energy Gamma Ray Experiments, Trieste, Italy, 8-10 September 2010
32. Second Workshop on ``Low Energy" Neutrino Physics and Astrophysics with IceCube Deep Core Sub-Array, State College, Pennsylvania, USA, 1-2 July 2010
33. Physics Colloquium, Texas A&M University-Commerce, USA, 25 February 2010

Often cited phenomenology papers with few authors

Citation information extracted on July 4, 2019 from

inspire-HEP: <https://inspirehep.net>

NASA-ADS: <https://ui.adsabs.harvard.edu>

1. Justin D. Finke, **Soebur Razzaque**, Charles D. Dermer, "Modeling the Extragalactic Background Light from Stars and Dust" *Astrophys.J.* 712 (2010) 238-249, arXiv:0905.1115 [astro-ph.HE]
Citations 318 (inSPIRE-HEP)
2. Charles D. Dermer, Massimo Cavadini, **Soebur Razzaque**, Justin D. Finke, Benoit Lott, "Time Delay of Cascade Radiation for TeV Blazars and the Measurement of the Intergalactic Magnetic Field", *Astrophys.J.* 733 (2011) L21, arXiv:1011.6660 [astro-ph.HE]
Citations 154 (inSPIRE-HEP)
3. E.Kh. Akhmedov, **Soebur Razzaque**, A.Yu. Smirnov, "Mass hierarchy, 2-3 mixing and CP-phase with Huge Atmospheric Neutrino Detectors", *JHEP* 1302 (2013) 082, Erratum: *JHEP* 1307 (2013) 026, arXiv:1205.7071 [hep-ph]
Citations 146 (inSPIRE-HEP)
4. **Soebur Razzaque**, Peter Meszaros, Eli Waxman, "Neutrino tomography of gamma-ray bursts and massive stellar collapses", *Phys.Rev.* D68 (2003) 083001, astro-ph/0303505
Citations 140 (inSPIRE-HEP)
5. **Soebur Razzaque**, Peter Meszaros, Bing Zhang, "GeV and higher energy photon interactions in gamma-ray burst fireballs and surroundings", *Astrophys.J.* 613 (2004) 1072-1078, astro-ph/0404076
Citations 110 (inSPIRE-HEP)
6. Xiang-Yu Wang, **Soebur Razzaque**, Peter Meszaros, Zi-Gao Dai, "High-energy Cosmic Rays and Neutrinos from Semi-relativistic Hypernovae", *Phys.Rev.* D76 (2007) 083009, arXiv:0705.0027 [astro-ph]
Citations 100 (inSPIRE-HEP)

7. **Soebur Razzaque**, “The Galactic Center Origin of a Subset of IceCube Neutrino Events”, Phys.Rev. D88 (2013) 081302, arXiv:1309.2756 [astro-ph.HE]]
Citations 93 (inSPIRE-HEP)
8. **Soebur Razzaque**, Peter Meszaros, Eli Waxman, “TeV neutrinos from core collapse supernovae and hypernovae”, Phys.Rev.Lett. 93 (2004) 181101, Erratum: Phys.Rev.Lett. 94 (2005) 109903, astro-ph/0407064
Citations 91 (inSPIRE-HEP)
9. C.D. Dermer, **S. Razzaque**, J.D. Finke, A. Atoyan, “Ultrahigh Energy Cosmic Rays from Black Hole Jets of Radio Galaxies”, New J.Phys. 11 (2009) 065016, arXiv:0811.1160 [astro-ph]
Citations 78 (NASA-ADS)
10. **Soebur Razzaque**, Peter Meszaros, Eli Waxman, “High energy neutrinos from gamma-ray bursts with precursor supernovae”, Phys.Rev.Lett. 90 (2003) 241103, astro-ph/0212536
Citations 77 (inSPIRE-HEP)
11. Olga Mena, Irina Mocioiu, **Soebur Razzaque**, “Neutrino mass hierarchy extraction using atmospheric neutrinos in ice”, Phys.Rev. D78 (2008) 093003, arXiv:0803.3044 [hep-ph]
Citations 74 (inSPIRE-HEP)
12. Cecilia Lunardini, **Soebur Razzaque**, Kristopher T. Theodoseou, Lili Yang, “Neutrino Events at IceCube and the Fermi Bubble”, Phys.Rev. D90 (2014) no.2, 023016, arXiv:1311.7188 [astro-ph.HE]
Citations 72 (inSPIRE-HEP)
13. **Soebur Razzaque**, Charles D. Dermer, Justin D. Finke, “Synchrotron radiation from ultra-high energy protons and the Fermi observations of GRB 080916C”, Open Astron.J. 3 (2010) 150-155, arXiv:0908.0513 [astro-ph.HE]
Citations 69 (inSPIRE-HEP)
14. Xiang-Yu Wang, **Soebur Razzaque**, Peter Meszaros, “On the Origin and Survival of UHE Cosmic-Ray Nuclei in GRBs and Hypernovae”, Astrophys.J. 677 (2008) 432-440, arXiv:0711.2065 [astro-ph]
Citations 64 (inSPIRE-HEP)
15. **Soebur Razzaque**, A.Yu. Smirnov, “Searching for sterile neutrinos in ice”, JHEP 1107 (2011) 084, arXiv:1104.1390 [hep-ph]
Citations 58 (inSPIRE-HEP)
16. **Soebur Razzaque**, Peter Meszaros, Eli Waxman, “Neutrino signatures of the supernova - gamma-ray burst relationship”, Phys.Rev. D69 (2004) 023001, astro-ph/0308239
Citations 56 (inSPIRE-HEP)
17. Amitabh Virmani, Sibesh Bhattacharya, Pankaj Jain, **Soebur Razzaque**, John P. Ralston, Douglas W. McKay, “Correlation of ultrahigh-energy cosmic rays with compact radio loud quasars”, Astropart.Phys. 17 (2002) 489-495, astro-ph/0010235
Citations 56 (inSPIRE-HEP)
18. Kunihiro Ioka, **Soebur Razzaque**, Shiho Kobayashi, Peter Meszaros, “TeV-PeV neutrinos from giant flares of magnetars and the case of SGR 1806-20”, Astrophys.J. 633 (2005) 1013-1017, astro-ph/0503279
Citations 54 (NASA-ADS)
19. Charles D. Dermer, **Soebur Razzaque**, “Acceleration of Ultra-High Energy Cosmic Rays in the Colliding Shells of Blazars and GRBs: Constraints from the Fermi Gamma ray Space Telescope “, Astrophys.J. 724 (2010) 1366-1372, arXiv:1004.4249 [astro-ph.HE]
Citations 50 (inSPIRE-HEP)
20. **Soebur Razzaque**, Charles D. Dermer, Justin D. Finke, “The stellar contribution to the extra-galactic background light and absorption of TeV gamma-rays”, Astrophys.J. 697 (2009) 483-492, arXiv:0807.4294 [astro-ph]
Citations 50 (inSPIRE-HEP)
21. **Soebur Razzaque**, Peter Meszaros, Eli Waxman, “High energy neutrinos from a slow jet model of core collapse supernovae”, Mod.Phys.Lett. A20 (2005) 2351-2368 , astro-ph/0509729
Citations 47 (inSPIRE-HEP)

22. Neil Gehrels, **Soebur Razzaque**, “Gamma Ray Bursts in the Swift-Fermi Era”, *Front.Phys.(Beijing)* 8 (2013) 661-678, arXiv:1301.0840 [astro-ph.HE]
Citations 45 (NASA-ADS)
23. Justin D. Finke, **Soebur Razzaque**, “Constraints on the Extragalactic Background Light from Very High Energy Gamma-Ray Observations of Blazars”, *Astrophys.J.* 698 (2009) 1761-1766, arXiv:0904.2583 [astro-ph.HE]
Citations 42 (inSPIRE-HEP)
24. **Soebur Razzaque**, “Long-lived PeV–EeV neutrinos from gamma-ray burst blastwave”, *Phys.Rev. D*88 (2013) no.10, 103003, arXiv:1307.7596 [astro-ph.HE]
Citations 40 (inSPIRE-HEP)
25. **Soebur Razzaque**, A.Yu. Smirnov, “Searches for sterile neutrinos with IceCube DeepCore”, *Phys.Rev. D*85 (2012) 093010, arXiv:1203.5406 [hep-ph]
Citations 40 (inSPIRE-HEP)
26. **Soebur Razzaque**, Surujhdeo Seunarine, David Z. Besson, Douglas W. McKay, John P. Ralston, David Seckel, “Coherent radio pulses from GEANT generated electromagnetic showers in ice”, *Phys.Rev. D*65 (2002) 103002, astro-ph/0112505
Citations 37 (NASA-ADS)
27. **Soebur Razzaque**, Charles D. Dermer, Justin D. Finke, “Lower limits on ultrahigh-energy cosmic ray and jet powers of TeV blazars”, *Astrophys.J.* 745 (2012) 196, arXiv:1110.0853 [astro-ph.HE]
Citations 36 (inSPIRE-HEP)
28. **Soebur Razzaque**, “A leptonic-hadronic model for the afterglow of gamma-ray burst 090510”, *Astrophys.J.* 724 (2010) L109-L112, arXiv:1004.3330 [astro-ph.HE]
Citations 35 (NASA-ADS)
29. T. DeYoung, **S. Razzaque**, D.F. Cowen, “Astrophysical tau neutrino detection in kilometer-scale Cherenkov detectors via muonic tau decay”, *Astropart.Phys.* 27 (2007) 238-243, astro-ph/0608486
Citations 34 (inSPIRE-HEP)
30. Cecilia Lunardini, **Soebur Razzaque**, “High Energy Neutrinos from the Fermi Bubbles”, *Phys.Rev.Lett.* 108 (2012) 221102, arXiv:1112.4799 [astro-ph.HE]
Citations 32 (inSPIRE-HEP)
31. Olga Mena, Irina Mocioiu, **Soebur Razzaque**, “Oscillation effects on high-energy neutrino fluxes from astrophysical hidden sources”, *Phys.Rev. D*75 (2007) 063003, astro-ph/0612325
Citations 30 (inSPIRE-HEP)
32. **Soebur Razzaque**, A.Yu. Smirnov, “Flavor conversion of cosmic neutrinos from hidden jets”, *JHEP* 1003 (2010) 031, arXiv:0912.4028 [hep-ph]
Citations 27 (inSPIRE-HEP)
33. **Soebur Razzaque**, A.Yu. Smirnov, “Super-PINGU for measurement of the leptonic CP-phase with atmospheric neutrinos”, *JHEP* 1003 (2010) 031, arXiv:0912.4028 [hep-ph]
Citations 25 (inSPIRE-HEP)