

Coleridge Faraday

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Education

- PhD. in Physics**, *University of Cape Town* 2025 – Present
Supervisor: Assoc. Prof. W. A. Horowitz
- MSc with Distinction in Physics**, *University of Cape Town* (90%) 2023 – 2024
Thesis: *Energy Loss and Theoretical Uncertainties in Small Quark-Gluon Plasmas*
Supervisor: Assoc. Prof. W. A. Horowitz
- Honours in Physics**, *University of Cape Town* (85%) 2022
Thesis: *Investigating the short path length corrections to jet phenomenology in heavy ion collisions*
Supervisor: Assoc. Prof. W. A. Horowitz
- BSc in Physics and Mathematics**, *University of Cape Town* (81%) 2019–2021
Supervisor: Assoc. Prof. Heribert Weigert
Project title: *Spontaneous symmetry breaking and the Higgs mechanism.*

Awards

- National Institute for Theoretical and Computational Sciences (NITHECS) Scholarship 2025 – 2027
- Science Faculty PhD Fellowship, *University of Cape Town* 2025 – 2027
- Manuel & Luby Washkansky Scholarship, *University of Cape Town* 2023
- SA-CERN Excellence Scholarship 2023 – 2024
- Science Faculty Scholarship, *University of Cape Town* 2020
- Science Entrance Scholarship, *University of Cape Town* 2019
- Dean's Merit List, *University of Cape Town* 2019, 2021, *
- UCT Mathematics Olympiad Gold Award 2015, 2016
- Professor John Webb Mathematics Scholarship, *Wynberg Boys' High School* 2014 – 2018

Publications

Journal Articles.....

- [1] **Faraday, C.** and Horowitz, W. A. **May 2025**. "Collisional and radiative energy loss in small systems". In: **2025** *Phys. Rev. C* 111.5, p. 054911. DOI: [10.1103/PhysRevC.111.054911](https://doi.org/10.1103/PhysRevC.111.054911). arXiv: [2408.14426](https://arxiv.org/abs/2408.14426) [[nucl-th](#)].
- [2] **Faraday, C.** and Horowitz, W. A. **May 2025**. "Statistical analysis of pQCD energy loss across system size, flavor, $\sqrt{s_{NN}}$, and p_T ". In: *Submitted to JHEP*. arXiv: [2505.14568](https://arxiv.org/abs/2505.14568) [[hep-ph](#)].
- [3] **Faraday, C.** and Horowitz, W. A. **Mar. 2025**. "A unified description of small, peripheral, and large system suppression data from pQCD". In: *Phys. Lett. B* 864, p. 139437. DOI: [10.1016/j.physletb.2025.139437](https://doi.org/10.1016/j.physletb.2025.139437). arXiv: [2411.09647](https://arxiv.org/abs/2411.09647) [[hep-ph](#)].
- [4] **Faraday, C.**, Grindrod, A., and Horowitz, W. A. **Nov. 2023**. "Inconsistencies in, and short pathlength **2023** correction to, $R_{AA}(p_T)$ in A + A and p + A collisions". In: *Eur. Phys. J. C* 83.11, p. 1060. DOI: [10.1140/epjc/s10052-023-12234-y](https://doi.org/10.1140/epjc/s10052-023-12234-y). arXiv: [2305.13182](https://arxiv.org/abs/2305.13182) [[hep-ph](#)].

*No awards were given in 2020 due to the COVID-19 pandemic

Conference Papers.....

- [1] **Faraday, C.** and Horowitz, W. A. **2025**. “Heavy Flavour Energy Loss in Small and Large Systems”. **2025**
In: vol. 316. Contribution to SQM2024, p. 04001. DOI: [10.1051/epjconf/202531604001](https://doi.org/10.1051/epjconf/202531604001). arXiv: [2409.14886](https://arxiv.org/abs/2409.14886) [[nucl-th](#)].
- [2] Bert, B., **Faraday, C.**, and Horowitz, W. A. **Dec. 2024**. “Modeling the Geometry of the Quark Gluon **2024**
Plasma”. In: ed. by A. Prinsloo. Dec., pp. 618–623. ISBN: 978-1-0370-2645-4.
- [3] **Faraday, C.** and Horowitz, W. A. **Dec. 2024**. “Energy Loss in Small Quark Gluon Plasmas”. In: ed. by
A. Prinsloo. Dec., pp. 629–634. ISBN: 978-1-0370-2645-4.
- [4] **Faraday, C.** and Horowitz, W. A. **June 2024**. “High-pT suppression in small systems”. In: vol. 296.
June, p. 12011. DOI: [10.1051/epjconf/202429612011](https://doi.org/10.1051/epjconf/202429612011). arXiv: [2312.10712](https://arxiv.org/abs/2312.10712) [[hep-ph](#)].
- [5] **Faraday, C.** and Horowitz, W. **Feb. 2024**. “Energy Loss in Small Collision Systems”. In: vol. Hard-
Probes2023. Feb., p. 131. DOI: [10.22323/1.438.0131](https://doi.org/10.22323/1.438.0131). arXiv: [2307.08355](https://arxiv.org/abs/2307.08355) [[nucl-th](#)].
- [6] **Faraday, C.** and Horowitz, W. A. **Sept. 2023**. “Assumption Breakdown in Radiative Energy Loss”. In: **2023**
67th Annual Conference of the South African Institute of Physics. Sept. arXiv: [2309.06246](https://arxiv.org/abs/2309.06246) [[hep-ph](#)].

Talks and Posters

Slides for my major presentations are available [here](#) under a CC-BY license.

Conference Talks.....

- [1] **Faraday, C. July 2024**. *Energy Loss in Small Quark Gluon Plasmas*. 68th Annual Conference of the **2024**
South African Institute of Physics (SAIP 2024). Makhanda, South Africa, July.
- [2] **Faraday, C. June 2024**. *Heavy Flavour Energy Loss in Small and Large Systems*. The 21st International
Conference on Strangeness in Quark Matter (SQM 2024). Strasbourg, France, June.
- [3] **Faraday, C. Sept. 2023**. *High- p_T suppression in small systems*. 30th International Conference on **2023**
Ultrarelativistic Nucleus-Nucleus Collisions (Quark Matter 2023). Houston, Texas, USA, Sept.
- [4] **Faraday, C. July 2023**. *Short path length corrections to pQCD phenomenological energy loss models in
a QGP*. 67th Annual Conference of the South African Institute of Physics (SAIP 2023). Richard's Bay,
South Africa, July.

Conference Posters.....

- [1] **Faraday, C. Apr. 2025**. *Data-Driven Predictions for Small System Energy Loss*. Quark Matter 2025. **2025**
Goethe University Frankfurt: Quark Matter 2025, Apr.

Outreach Talks.....

- [1] **Faraday, C. May 2025**. *Smashing Atoms to Rewind the Universe*. The University of Cape Town's Society **2025**
of Physics Students. Cape Town, South Africa, May.
- [2] **Faraday, C. Oct. 2024**. *Racing Balls*. Phenomenal physics (high school outreach). Cape Town, South **2024**
Africa: University of Cape Town, Oct.
- [3] **Faraday, C. Sept. 2024**. *Introduction to Heavy-Ion Physics*. Outreach trip to University of Venda.
Thohoyandou, South Africa: University of Venda, Sept.
- [4] **Faraday, C. Nov. 2023**. *Quark Gluon Plasma Formation in Small Systems*. ATLAS Showcase, UCT-CERN **2023**
relaunch. Cape Town, South Africa, Nov.
- [5] **Faraday, C. Oct. 2023**. *Probing the Early Universe with Extreme Temperature Physics*. Postgraduate
Showcase 2023. Cape Town, South Africa: University of Cape Town, Oct.

Academic Service

Postgraduate representative for Science Faculty, University of Cape Town

2025 – Present

Reviewing.....

Proceedings of the 68th Annual Conference of the South African Institute of Physics

Teaching

Quantum Field Theory II (SATACS), Tutor	2025
Quantum Field Theory I (SATACS), Tutor	2024
Honours Statistical Physics (UCT), Tutor	2024
Honours Quantum Mechanics (UCT), Tutor	2023, 2024
Third Year Statistical Physics (UCT), Tutor	2023
First Year Physics (with lab) (UCT), Tutor	2022
High School Physics, Mathematics, Chemistry, and Computer Science (Chit-Chat Tutoring), Private Tutor	2019–2022

Mentorship roles

Ben Bert. Mentoring and helping with honours and MSc projects on phenomenological energy loss at UCT	2023 – Present
Tiaan van der Merwe. Mentoring and helping with honours project on phenomenological energy loss at UCT	2024 – Present