Curriculum Vitae

Personal Details

Full Name: Dr. Dawit Solomon Worku
Address: 31 Rostrevor Apartment, Arundel Road, Rosebank 7700, Cape Town, South Africa
Mobile: +27 71 437 7290
Email: dawitsol.worku@gmail.com | workud@cput.ac.za
Nationality: Ethiopian (Permanent Resident in South Africa)
Driver's License: Yes

Profile Summary

Experienced Lecturer and Researcher in Physics with over 15 years of teaching, curriculum development, research supervision, and academic leadership experience. Strong publication record in DHET-accredited journals. Proven skills in curriculum design, academic coordination, and student mentorship across undergraduate and ECP programmes. Active Research Associate with NiTheCS and member of the South African Institute of Physics (SAIP).

Academic Qualifications

Qualification	Institution	Year
PhD in Physics	University of Cape Town	Completed
MSc in Physics	Addis Ababa University, Ethiopia	Completed
BSc Honours in Physics	Addis Ababa University, Ethiopia	Completed
Bachelor of Science (Physics)	Addis Ababa University, Ethiopia	Completed

---

Employment History

Lecturer in Physics
Cape Peninsula University of Technology (CPUT), South Africa | 2012 – Present

- Teaching undergraduate and ECP Physics modules across multiple faculties.
- ECP Physics Coordinator and Year Coordinator for Mathematical Sciences ECP.

- Active contributor to curriculum review and development committees.
- Supervision of undergraduate and intern research projects.
- Lead roles in the BSc Applied Industrial Physics Programme development.

Mathematics and Physics Tutor
University of Cape Town (UCT), South Africa | 2008 – Present

- Tutoring first-year Mathematics and Engineering Physics courses (MAM and PHY modules).
- Involved in foundational academic support programmes.

Lecturer / Teaching Assistant
Hawassa University, Ethiopia | 2004 – 2007

- Delivered undergraduate courses in Mechanics, Electricity & Magnetism, Waves & Optics, Thermodynamics, and Electronics.
- Supervised first- and second-year laboratory experiments and fourth-year honours research projects.
- Participated in Physics curriculum review aligning with Ethiopian national standards.

Teaching and Learning Experience

List of Courses/Modules Taught:

Course/Module	Level and Programme
General Physics	First-Year: BSc & Diploma (Engineering, Health)
Engineering Physics I & II	First-Year Diploma: Civil Engineering
Marine Physics (MPH150X)	First-Year Undergraduate: Marine Science
Physics for Mathematical Science (PHC150X)	First-Year Undergraduate: Mathematical Sciences
Health Physics	First-Year: Extended Curriculum Programme (ECP)
Thermodynamics & Statistical Physics	Second- and Third-Year Undergraduate
Quantum Mechanics (Selected Topics)	Advanced Undergraduate / Honours Bridging
Electronics	Second-Year Undergraduate
Solid Statics / Mechanics of Materials	Second-Year Diploma: Civil & Mechanical Engineering
Mathematics for Science & Engineering	First-Year Foundational (UCT: MAM modules)

Course/Module	Level and Programme
Computer Skills & Numerical Methods	First-Year Support Module

Teaching Methods:

- Blended learning (Blackboard, MS Teams)
- Simulations, demonstrations, and virtual labs
- Case-based and problem-based learning
- Research-integrated teaching (project supervision)

Research Profile

Research Focus Areas:

- Statistical Thermal Models in High-Energy Particle Physics
- Non-Extensive Thermodynamics (Tsallis Formalism)
- Computational Astrophysics (Compact Stars, Supernova Modeling)

Peer-Reviewed DHET-Accredited Journal Articles:

- Cleymans, J., & Worku, D., *The Hagedorn Temperature Revisited*, Modern Physics Letters A, 2011.
- Cleymans, J., & Worku, D., *The Tsallis Distribution in Proton-Proton Collisions*, Journal of Physics G, 2012.
- Cleymans, J., & Worku, D., *Relativistic Thermodynamics*, European Physical Journal A, 2012.
- Cleymans, J., et al., *Systematic Properties of the Tsallis Distribution*, Physics Letters B, 2013.

Other Research Outputs (arXiv and Technical Reports):

- Cleymans, J., & Worku, D., *The Tsallis Distribution and Transverse Momentum Distributions*, arXiv:1106.3405 [hep-ph].
- Worku, D., *The Tsallis Formalism in Statistical Mechanics*, AIMS Thesis, 2008.

Conference Presentations (Selected):

- SAIP Annual Conferences: 2009, 2010, 2016, 2019, 2022
- U6+ International Conferences: 2018, 2024
- International Workshop on Hot and Dense Nuclear and Astrophysical Matter (HDM2012)
- UCT Physics Colloquium (2012)
- Kruger 2022: Discovery Physics at the LHC

Research Supervision:

- Undergraduate and Honours research projects at CPUT
- Supervision of NITheCS internship projects (2021–2023)

- SAIP 2022 student presentations on Compact Stars and Supernovae

Editorial and Research Leadership:

- Associate Editor for SAIP 2022 Conference Proceedings
- Session Chair and LOC Member for Kruger 2022

Community Engagement

- **Board Member**, Down Syndrome Support (Cape) (2016 – Present)
- **Education Support Volunteer**, Beautiful Gate South Africa (2016–2018)

Professional Memberships

- **South African Institute of Physics (SAIP)** – Member since 2009
- **African Institute for Mathematical Sciences (AIMS)** – Alumnus
- **National Institute for Theoretical and Computational Sciences (NiTheCS)** – Research Associate

---

Technical Skills

- Programming & Analysis: Python, Mathematica, OriginPro
- Research Tools: ROOT (CERN), Gnuplot, LaTeX
- Learning Platforms: Blackboard, MS Teams

Professional References

1. Dr Thomas Farrar (Acting Head - Department of Mathematics & Physics, Cape Peninsula University of Technology)
Email: FarrarT@cput.ac.za
Tel: +27(0) 21 959 5804
2. Prof. Azwinndini Muronga (Deputy Vice-Chancellor: Research, Innovation and Internationalization – Nelson Mandela University) Email: Azwinndini.Muronga@mandela.ac.za
Tel: +27 41 504 2873
Mobile: +27 82 458 4535
3. Dr. Ignitius John (Cape Peninsula University of Technology, Mathematics and Physics Department)
Email: johni@cput.ac.za
Tel: +27219596797
4. Dr. Martin Kudinha (Cape Peninsula University of Technology, Mathematics and Physics Department)
Email: kudinham@cput.ac.za