

# Curriculum Vitae

## Jimmy Shapopi, BSc. (Hons) MSc.

+264816699336/ +264811442126

jimzashapopi@yahoo.com

<https://jimmyshapopi.com>

<https://github.com/ShapopiJ>

<https://www.linkedin.com/in/jimmy-shapopi-521959160/>



## Skills

Languages	Strong reading, writing and speaking competencies for English and Afrikaans. Communication competency for Oshiwambo and Oshihherero.
Coding	Python, C++, C#, ROOT, BASH, Fortran, $\LaTeX$ .
Machine Learning	scikit-learn, Turi-create, graphlab, SFrames
Software	Ubuntu, Arch, RHEL, Paris Analysis, MS Office, MS Windows, MS-DOS, Photo-shop/GIMP
Mathematics	Advanced: Linear Algebra, Calculus, Logic. Intermediate: Topology (Geometry), Number Theory.
Statistics	Descriptive Statistics, Probability Theory, Hypothesis Testing, Regression Analysis.
Physics	Advanced: Astrophysics, Astro-particle Physics, Astronomy, Computational Physics. Intermediate: Classical Mechanics, Electrodynamics, Statistical Mechanics and Thermodynamics, Quantum Mechanics, Relativity.
Chemistry	Physical Chemistry, Inorganic Chemistry.
Databases	MySQL, SQLite.
Web Dev	HTML, CSS, PHP, JavaScript, Django, REACT.
Misc.	Academic research, Lecturing, Training.

## Professional Career

since Jan 2021	<b>Lecturer.</b> Environmental Science Department, School of Science, University of Namibia, Namibia. Lecturer in Physics and Chemistry
since Nov 2020	<b>Website Administrator.</b> Office of the Pro-Vice Chancellor: Research Innovation and Development, University of Namibia, Namibia.
since Jul 2019	<b>Student Environmental Leader.</b> International We Love You Foundation, Department of Global Communications, United Nations.
since Mar 2018	<b>Computing Cluster Administrator.</b> Physics Department, Science Faculty, University of Namibia, Namibia.
May 2020 – Jun 2020	<b>Data Acquisition Expert.</b> High Energy Stereoscopic System, Namibia. ( <i>One month data taking period</i> )

## Professional Career (continued)

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- Feb 2019 – Dec 2019    **Substitute Lecturer.** Physics Department, Science Faculty, University of Namibia, Namibia.  
Substitute Lecturer in Astrophysics and Quantum Mechanics
- Oct 2019 – Nov 2019    **Data Acquisition Expert.** High Energy Stereoscopic System, Namibia. (*One month data taking period*)
- Jul 2019 – Aug 2019    **Research Intern.** Nicolaus Copernicus Astronomical Center, Warsaw, Poland.  
Advisor: Prof. Andrzej Zdziarski
- May 2019 – Sep 2019    **Local Conference Organizer.** High Energy Astrophysics in Southern Africa 2019, Swakopmund, Namibia.
- Apr 2019 – May 2019    **Data Acquisition Expert.** High Energy Stereoscopic System, Namibia. (*One month data taking period*)
- Dec 2018 – Jan 2019    **Data Acquisition Expert.** High Energy Stereoscopic System, Namibia. (*One month data taking period*)
- Feb 2018 – Dec 2018    **Undergraduate Student Assistant.** Physics Department, Science Faculty, University of Namibia, Namibia.  
Tutorials and Laboratory Demonstrator for 1st – 4th years
- Mar 2018 – Apr 2018    **Data Acquisition Expert.** High Energy Stereoscopic System, Namibia. (*One month data taking period*)
- Dec 2017 – Jan 2018    **Data Acquisition Shifter.** High Energy Stereoscopic System, Namibia. (*One month data taking period*)

## Education

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- Feb 2018 – Feb 2020    **M.Sc. Physics, University of Namibia, Namibia** *Computational High Energy Astrophysics.* Thesis title: *A hybrid analysis approach to the High Energy Stereoscopic System phase II Mono-Analysis.*  
Supervisor: Dr. Michael Backes FRAS
- Feb 2014 – Jan 2018    **B.Sc. (Hons.) Physics (minor: Chemistry), University of Namibia, Namibia.**  
*Upper Second.* Department Prize for best 4th year student. Thesis title: *Analysis of High Energy Stereoscopic System (H.E.S.S.) Data on the Active Galactic Nucleus 3C279.*  
Supervisor: Dr. Michael Backes FRAS
- Jan 2021 – Oct 2021    **Specialization, University of Michigan, United States of America** Statistics with Python.  
Instructors: Prof. Kerby Shedden, Dr. Brenda Gunderson, Dr. Brady T. West
- Jun 2021 – Oct 2021    **Course Certificate, University of Michigan, United States of America** Fitting Statistical Models to Data with Python.  
Instructors: Prof. Kerby Shedden, Dr. Brenda Gunderson, Dr. Brady T. West
- Jun 2021 – Sept 2021    **Course Certificate, University of Michigan, United States of America** Inferential Statistical Analysis with Python.  
Instructors: Prof. Kerby Shedden, Dr. Brenda Gunderson, Dr. Brady T. West



## Education (continued)

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- Jan 2021 – Jun 2021  **Course Certificate, University of Michigan, United States of America** Understanding and Visualizing Data with Python.  
Instructors: Prof. Kerby Shedden, Dr. Brenda Gunderson, Dr. Brady T. West
- Oct 2020 – Dec 2020  **Course Certificate, University of Michigan, United States of America** Building Database Applications in PHP.  
Instructor: Prof. Charles Severance
- Aug 2020 – Sep 2020  **Course Certificate, University of California, Davis, United States of America** Introduction to Web Development.  
Instructor: Dr. Daniel Randall
- Jul 2020 – Aug 2020  **Course Certificate, International Business Machines Corporation, United States of America** Python for Data Science and Artificial Intelligence.  
Instructor: Dr. Joseph Santarcangelo
- Apr 2020 – Jun 2020  **Course Certificate, University of Michigan, United States of America** Introduction to Data Science with Python.  
Instructor: Dr. Christopher Brooks
- Aug 2020 – Oct 2020  **Course Certificate, University of California, Davis, United States of America** SQL for Data Science.  
Instructor: Dr. Sadie St. Lawrence
- Aug 2020 – Nov 2020  **Course Certificate, University of Michigan, United States of America** Applied Plotting, Charting and Data Representation in Python.  
Instructor: Dr. Christopher Brooks
- Aug 2020 – Oct 2020  **Course Certificate, University of Michigan, United States of America** Web Application Technologies and Django.  
Instructor: Prof. Charles Severance
- Aug 2020 – Nov 2020  **Course Certificate, University of Michigan, United States of America** Building Web Application in Django.  
Instructor: Prof. Charles Severance
- Sep 2020 – Oct 2020  **Certificate, 5<sup>th</sup> Arab School for Astrophysics, Arab Astronomical Society** *Specialization: X-ray Astronomy.*
- Jun 2018 – Aug 2018  **Certificate, African School of Physics, Windhoek, Namibia** *Specialization: Computational Physics, Astrophysics, Nuclear Physics, Particle Physics.*

## Research Publications

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-  H. E. S. S. Collaboration, : Abdalla, H. et al. (2021a). Searching for TeV Gamma-Ray Emission from SGR 1935+2154 during Its 2020 X-Ray and Radio Bursting Phase. *The Astrophysical Journal*, 919(2)arXiv 2110.00636, 106.  <https://doi.org/10.3847/1538-4357/ac0fe1>

- 2 Adams, C. B. et al. (2021). Observation of the gamma-ray binary HESS J0632+057 with the H.E.S.S., MAGIC, and VERITAS telescopes. *arXiv e-prints* arXiv 2109.11894, arXiv:2109.11894.
- 3 H. E. S. S. Collaboration, : Abdalla, H. et al. (2021b). Search for Dark Matter Annihilation Signals from Unidentified Fermi-LAT Objects with H.E.S.S. *The Astrophysical Journal*, 918(1) arXiv 2106.00551, 17. <https://doi.org/10.3847/1538-4357/abff59>
- 4 Abdalla, H. et al. (2021a). TeV Emission of Galactic Plane Sources with HAWC and H.E.S.S. *The Astrophysical Journal*, 917(1) arXiv 2107.01425, 6. <https://doi.org/10.3847/1538-4357/abf64b>
- 5 H. E. S. S. Collaboration, : Abdalla, H. et al. (2021c). LMC N132D: A mature supernova remnant with a power-law gamma-ray spectrum extending beyond 8 TeV. *arXiv e-prints* arXiv 2108.02015, arXiv:2108.02015.
- 6 Abdalla, H. et al. (2021b). Evidence of 100 TeV  $\gamma$ -ray emission from HESS J1702-420: A new PeVatron candidate. *arXiv e-prints* arXiv 2106.06405, arXiv:2106.06405.
- 7 H. E. S. S. Collaboration, Abdallah, H. et al. (2021). Search for dark matter annihilation signals from unidentified Fermi-LAT objects with H.E.S.S. *arXiv e-prints* arXiv 2106.00551, arXiv:2106.00551.
- 8 H.E.S.S. Collaboration, Abdalla, H. et al. (2021). Revealing x-ray and gamma ray temporal and spectral similarities in the GRB 190829a afterglow. *Science*, 372(6546), 1081–1085. <https://doi.org/10.1126/science.abe8560>
- 9 Zdziarski, A. A., Shapopi, J. N. S., & Pooley, G. G. (2020). The persistent radio jet coupled to hard x-rays in the soft state of cyg x-1. *The Astrophysical Journal Letters*, 894(2) arXiv 2002.12152, L18. <https://doi.org/10.3847/2041-8213/ab8d3b>
- 10 Shapopi, J. N. S., & Zdziarski, A. A. (2020). Correlations and lags between X-ray and radio emission of Cyg X-1. *arXiv e-prints* arXiv 2004.11786, arXiv:2004.11786.

## Personal Awards

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- Apr 2018
- 📖 *Certificate of Excellence: **Best 4th Year student.*** Physics department, Science Faculty, University of Namibia, Namibia.
  - 📖 *Certificate of Excellence: **Advanced Electrodynamics.*** Physics department, Science Faculty, University of Namibia, Namibia.
  - 📖 *Certificate of Excellence: **Plasma Physics.*** Physics department, Science Faculty, University of Namibia, Namibia.
  - 📖 *Certificate of Excellence: **Astrophysics.*** Physics department, Science Faculty, University of Namibia, Namibia.
  - 📖 *Certificate of Excellence: **Solid State Physics.*** Physics department, Science Faculty, University of Namibia, Namibia.
- Nov 2017
- 📖 *Award of Excellence: **Best Physics Presentation.*** 5th Annual Faculty of Science Research Conference, Science Faculty, University of Namibia, Namibia.
- Apr 2017
- 📖 *Certificate of Excellence: **Physical Chemistry.*** Physics department, Science Faculty, University of Namibia, Namibia.
  - 📖 *Certificate of Excellence: **Modern Physics.*** Physics department, Science Faculty, University of Namibia, Namibia.
  - 📖 *Certificate of Excellence: **Electrodynamics.*** Physics department, Science Faculty, University of Namibia, Namibia.
  - 📖 *Certificate of Excellence: **Linear Algebra.*** Mathematics department, Science Faculty, University of Namibia, Namibia.
- Apr 2016
- 📖 *Certificate of Excellence: **Best Second Year.*** Mathematics department, Science Faculty, University of Namibia, Namibia.

## Personal Awards (continued)

- 📖 *Certificate of Excellence: **Elementary Linear Algebra***. Mathematics department, Science Faculty, University of Namibia, Namibia.
- 📖 *Certificate of Excellence: **Calculus***. Mathematics department, Science Faculty, University of Namibia, Namibia.
- 📖 *Certificate of Excellence: **Ordinary Differential Equations***. Mathematics department, Science Faculty, University of Namibia, Namibia.

## Scholarships

- July 2019 📖 *University Student Environmental Leader. **Clean World Movement. International We Love You Foundation***, Department of Global Communications, United Nations.
- Feb 2018 – Dec 2019 📖 *H.E.S.S. MSc. Scholarship. **Max Planck Institute for Nuclear Physics***, Heidelberg, Germany

## Research Visits

- August 2019 📖 Nicolaus Copernicus Astronomical Center.  
Advisor: **Prof. Andrzej Zdziarski**  
*X-ray binary variability studies.*
- April 2019 📖 University of Witwatersrand.  
Advisor: **Prof. Nukri Komin**  
*High Performance Computer Software maintenance.*  
*H.E.S.S. II Hybrid Analysis.*
- November 2018 📖 University of Witwatersrand.  
Advisor: **Prof. Nukri Komin**  
*High Performance Computer Software set up.*


## Conferences & Personal Development

### Conference Attendance







*\*Contribution with Presentation in bold*

- 18 – 19 Jun 2020 📖 High Performance Computing Knowledge Meeting. *High-Performance Computing, Data Analysis, and Artificial Intelligence*. Online.
- 13 – 14 Nov 2019 📖 **7th Annual Science Research Conference**. *Global Climate Challenges: A SADC Cry on Water, Energy, Health & Food Security*. University of Namibia. **Contribution:** A hybrid analysis approach to the High Energy Stereoscopic System phase II mono-analysis & Overview of the University of Namibia High Performance Computer.
- 28 – 30 Aug 2019 📖 **High Energy Astrophysics in Southern Africa 2019**. National Marine Aquarium, Swakopmund, Namibia. **Contribution:** Correlations and lags between X-ray and radio emission of Cyg X-1
- 10 Apr 2019 📖 Groundbreaking Results from the Event Horizon Telescope. *International Astronomy Announcement*. University of Pretoria.
- 14 – 15 Nov 2018 📖 6th Annual Science Research Conference. *Science Solutions for Economic Development*. University of Namibia.
- Jun 28–Jul 4, 2018 📖 African Conference on Physics and Applications. Namibian University of Science and Technology.

## Conferences & Personal Development (continued)

- 15 – 16 Nov 2017  **5th Annual Science Research Conference.** *Science Today: Global Bridge to the Future.* University of Namibia. **Contribution:** Analysis of High Energy Stereoscopic System (H.E.S.S.) Data on the Active Galactic Nucleus 3C279.

### Personal Development

- May – Jul 2020  **School: African School of Physics.** Online. Physics and Computing.
- 23 – 24 Jan 2020  **Workshop: Machine Learning.** Physics Dept. University of Namibia. Machine Learning and its applications to Gamma-ray Astronomy.
- 7 Sep 2018  **Workshop: High Performance Computing.** School of Computing, University of Namibia.
- 25 Jun – 14 Jul 2018  **School: African School of Fundamental Physics.** University of Namibia. Physics and Computational Physics. (3 WEEK INTENSIVE)
- 18 – 19 Aug 2017  **Workshop: Software Carpentry.** University of Namibia. Scientific Computing (PYTHON, BASH, GITHUB).
- 21 Jul 2017  **Workshop: YES Network Career Workshop.** Ministry of Mines and Energy. Physics and Geo-Physics career guidance.


## Research Contributions

- 1 Frans, L. N. (2020). *Determination of the precipitable water vapour at the Gamsberg mountain and at the H.E.S.S. site* (Master's thesis). University of Namibia.
- 2 Nagnhonga, T. T. (2019). *Data analysis of Markarian 421 Observed by the High Energy Stereoscopic System (H.E.S.S.) in January 2017* (Master's thesis). University of Namibia.
- 3 Ndiyavala, H. (2019). *Modelling globular clusters as multi-wavelength diffuse emitters* (Doctoral dissertation). North-West University.
- 1 Brand, A. (2020). *Gamma-hadron separation in VHE gamma-ray astronomy using a multivariate analysis method* [Bachelor's, Thesis].

## References

### Dr. Michael Backes FRAS

Senior Lecturer  
Department of Physics  
University of Namibia,  
340 Mandume Ndemufayo Ave, Pionierspark,  
Private Bag 13301, Windhoek, NAMIBIA.

 mbackes@unam.na


### Prof. Nukri Komin

Associate Professor  
Wits Center for Astrophysics  
School of Physics,  
University of Witwatersrand.  
Private Bag 3, Wits, 2050

 nukri.komin@wits.ac.za

### Dr. Eli Kasai

Senior Lecturer  
Department of Physics  
University of Namibia,  
340 Mandume Ndemufayo Ave, Pionierspark,  
Private Bag 13301, Windhoek, NAMIBIA.

 ekasai@unam.na