Curriculum Vitae (CV)

1. Personal Data:

1) Name: Prof. Joel Kipkorir Tonui, PhD.
2) Date of Birth: 5th October, 1967.
3) Place of birth: Kapchumbe, Bomet County, Kenya.
4) Marital Status: Married with Two Kids.
5) Nationality: Kenyan.
6) Religion: Protestant (Deliverance Church, Kenya).
7) Languages: English, Swahili, Kalenjin and little Greek.
8) Present post: Associate Professor, Department of Physics, University of Eldoret.
9) Tel. No: +25 713 488 140.
10) E-mail: jtkipkorir@yahoo.co.uk; jktonui@uoeld.ac.ke

2. Education:

2006: PhD in Physics, University of Patras, Greece, Graduated on July 28, 2006.
Dissertation: PV/T Solar Air Systems, Advisor: Prof. Y. Tripanagnostopoulos, PhD.

1998: M.Phil in Physics, Moi University, Kenya, Graduated in 1998.

1992: BSc (Hons) in Physics and Mathematics, 2nd Class, Upper Division.
Moi University, Kenya. Graduated in 1992.

1987: KACE (3 Principal, 1 Subsidiary) at Moi High School - Kabarak.

1985: KCE (2nd Division, 18 points), Rift Valley Technical High School.

1981: CPE (36 points), Kapsosurwo Primary School.

3. Working Experience:

From Jan, 2015 to date: Associate Professor, Department of Physics, University of Eldoret.
Duties: Teaching of both undergraduate and postgraduate physics courses, supervising both M.Sc. and PhD students.

Feb, 2009-Dec, 2014: Senior Lecturer, Department of Physics, Chepkoilel University College.
Taught and examined undergraduate and postgraduate physics courses. Supervised both M.Sc, and PhD theses.

2007-Feb, 2009: Lecturer, Department of Physics, Moi University. Teaching and examining undergraduate and postgraduate students. Supervised M.Sc. theses.

2002-2006 Study leave, University of Patras, Greece. Pursued doctorate studies. Research work on Hybrid-Photovoltaic/Thermal air Systems. Both experimental and theoretical modelling.

1998- 2007: Tutorial Fellow, Department of Physics, Moi University. Teaching and examining undergraduate students.

1992-1998: Graduate Assistant, Department of Physics, Moi University. Supervising and making of 1st years practicals.

4. Responsibilities:

- Served as a departmental secretary and timetable coordinator.
- Served as a warden for two hostels at then Chepkoilel University College.
- Served in airstrip committee of Moi University.
- Served as Head of Department (HoD), Physics Department, University of Eldoret from July, 2012 to August, 2018.
- Served in a committee investigating the activities of the University of Eldoret catering unit vis-a-vis the income generated in February/March, 2018.
- Chaired a committee appointed by VC to investigate circumstances that lead to an engine cease of a University Primary vehicles, Kenya October, 2018.
- Have served on many occasions in short-listing committee for Vice-Chancellor's appointment positions such as academic staff positions from senior lecturer and below, senior auditors and below, farm manager, among others.
- Have served on several occasions as chairman of tender opening committee.

5. Postgraduate Supervision:

- Supervised 15 Masters' Students who have graduated.
- Co-supervised 7 Ph. D students who have graduated.
- Internally eexamined 17 M.Sc. theses, and 6 PhD theses.

6. Part-time Lecturing:

- Moi University, College of Health Sciences, School of Medicine
  - Has been teaching Imaging Physics to M.Med Radiology students in the Department of Radiology and Imaging, from 2010/2011 academic year to date.
  - Taught physics for health sciences in the School of Public Health from 2006/07 and Department of Physiotherapy from 2011/12 to 2013/2014 academic years.
- Mount Kenya University, Eldoret Campus (Weekends)
  - Taught medical imaging physics and biomedical instrumentation at the School of Health Sciences, from 2011/12 to 2014/2015 academic years.

7. External examiner

- Examine 3 M.Sc. thesis from Kibabii University.
- Examined 1 PhD thesis, Department of Physics, Egerton University.
- External Examiner in the School of Science, Department of Mathematics and Physical Science, Dedan-Kimathi University of Technology, for 4-years beginning May, 2018.
- External Examiner in the School of Science, Department of Renewable Energy and Technology, Turkana University College, for 2-years beginning 2020/2021 academic year.
- External Examiner in the School of Science, Department of Physical Science, Kaimosi Friends University College, beginning 2020/2021 academic year.

8. Technical Skills:

General skills in physics, mathematics and computing. Specific expertise and interests in:

- Physics: All major branches of physics, Electronics.
- Solar Energy: solar radiation, solar thermal systems, photovoltaic, hybrid PV/T.
- Medical Physics: Instrumentation, physics of imaging techniques (radiography, CT, DR, Mammography, Ultrasound, MRI, Nuclear Medicine, etc).

- Computing: General computing, FORTRAN.

9. Member of Professional Body:

- Member of African Network of Solar Energy (ANSOL)

10. Publications

(a) Refereed Journals

1. Y. Tripanagnostopoulos, M. Souliotis, **J.K Tonui**, A. Kavga, 2005. Irradiance aspect for energy balance in Greenhouses. *Acta Horticulturae, Vol. 691 pp. 733-740.*

2. **J.K. Tonui**, Y. Tripanagnostopoulos, 2007. Improved PV/T solar collectors with heat extraction by natural or forced air circulation. *Renewable Energy 32, pp. 623-637.*

3. **J.K. Tonui**, Y. Tripanagnostopoulos, 2007. Air-cooled PV/T solar collectors with low cost performance improvements. *Solar Energy 81, pp. 498-511.*

4. Y. Tripanagnostopoulos, Ch. Siabekou, **Tonui J.K**, 2007. The Fresnel lens concept for solar control of buildings. *Solar Energy 81, pp. 661-675.*

5. **J.K. Tonui**, Y. Tripanagnostopoulos, 2008. Performance improvements of PV/T solar collectors with natural air flow operation. *Solar Energy 82, pp.1-12.*

6. **J.K. Tonui,** S.K Rotich, J.K Maritim and P.K Tanui, **2010**. Experimental investigation on the performance of a prototype solar air heater for drying applications. *Kenya Science, Technology and Innovation Journal*, Vol. 1, pp. 28-33, [ISBN 2079-5440].

7. **J.K. Tonui,** P.K Tanui**,** J.K Maritim, S.K Rotich and P.K Torongey, **2012**. Assessment of solar thermal energy potential as a source of energy for drying application. *East Africa Journal of Pure and Applied Science (EAPAS)*, Vol.1 (2), pp. 57-65, [ISSN 2070-0903].

8. R.K Koech, Ondieki H.O**, J.K Tonui** and S.K Rotich, **2012.** Performance Analysis of a PV/T Air System Based on Heat Transfer Perspective. *Int. J. Scientific and Engineering Research* (IJSER Vol. 10(3), October, 2012), [ISSN 2229-5518]. Available online at *http//:www.ijser.org*.

9. Bitok J.K, Kanyeki F.G, **Tonui J.K** and Khanna K.M, **2012**. Green's Function Solution for Itinerant Oscillator Model for Fluids. *Int. Journal of Physics and Mathematical Science,* Vol. 2(3), July-September, pp. 63-70. [ISSN: 2277-2111].

10. R.K Koech, Ondieki H.O**, J.K Tonui** and S.K Rotich, **2012.** A steady State Thermal Model for Photovoltaic/Thermal (PV/T) System under Various Conditions. *Int. J. Scientific & Technology Research,* IJSTR Vol. 1(11), December, 2012, pp. 1-5, [ISSN 2277-8616]

11. S. K Rotich, D.K Choge and **J.K Tonui**, **2012.** Analysis of wind potential and solar energy potential in Eldoret, Kenya. *Accepted for publication by EAPAS* (Ref: EAPAS/1000/12), [ISSN 2070-0903].

12. Ondieki H.O and **J.K Tonui**, **2013**. A parametric study of a natural flow solar air heater with rectangular air-duct profile. *African Journal of Science, Technology, Innovation and Development (AJSTID)*, Vol. 5(2), pp. 97-102.

13. Chelimo L S, Khanna K M, **Tonui J K**, Rapando B W, Kandie D K, Masinde F W and Bitok J K, **2013**. Incommensurability of HCP solid ^{4}He quantum crystal. *Int. J. of Physics and Mathematical Science*, April-June, 2013. Vol. 3(2) pp. 73-78. ISSN: 2277-2111.

14. D.K. Choge, S.K Rotich, **J. K Tonui** and J.K Maritim, **2013.** Wind energy probability distributions for Eldoret. *Int. J. of Advanced Research, ISSN NO 2320-5407* , Vol. 1(6), 234-240

15. Kanyeki F.G., Masinde F.W., Murunga G.S.W., **Tonui J.K.,** Obota S.E., Muguro K.M., Mukoya A.K., Ochieng J.O., Khanna K.M. and Tanui P.K, **2014**. Role of attractive interaction in the high-tc superconductivity. *Int. J. of Physics and Mathematical Sciences ISSN: 2277-211. Vol. 4 (1) January-March, pp. 86-93.*

16. Kanyeki F.G., Ochieng' J.O., Obota S.E.O, Mukoya A.K., **Tonui J.K**. and Tanui P.K., MurungaG.S.W., Khanna K.M., Muguro K.M., Masinde F.W, **2014**. Mean-field instability of trapped dilute boson-fermion mixture. *Int. J. of Physics and Mathematical Sciences ISSN: 2277-211. Vol. 4 (1) January-March, pp. 94-101.*

17. Ondieki H. O., Koech R. K., **Tonui J.K.**, Rotich S. K, **2014**. Mathematical Modeling of Solar Air Collector with a Trapezoidal Corrugated Absorber Plate. *Int. J. Scientific & technology Research ISSN 2277-8616*. Vol 3(8), pp.51-56.

18. R. K. Koech, G. K Arusei, G. K Yegon, **Tonui J.K.**, S. K Rotich, **2014**. Photovoltaic/Thermal (PV/T) System as Innovative Solution to Increase Solar Energy Conversion Efficiency. Int. *J. emerging technology and adv, engineering, ISSN 2250-2459*. Vol. 4 (10), pp 717-722.

19. Chelimo L.S., Khanna K.M., Sirma K.K., **Tonui J.K**., Korir P.K., Kibet J.K., Achieng A.J. and Sarai A., **2014**. Nucleon-Nucleon Interaction in finite nuclear matter. *Int. J. of Physics and Mathematical Sciences ISSN: 2277-2111*, Vol. 4(1), 54-58.

20. Rapando B.W., Khanna K.M., **Tonui J.K**., Sakwa T.W., Muguro K.M., Kibe H, AyodoY.K. and Sarai A., **2015**. The dipole mediated t-j model for high-tc superconductivity. *Int. J. of Physics and Mathematical Sciences, ISSN: 2277-211*, Vol. 5(3), 32 -37.

21. Chelimo S.L., Khanna M.K., **Tonui J.K**., Murunga G.S., Kibet J.K., **2016.** Crystallization of Hard-Sphere Assembly of Fermions. *American Journal of Modern Physics*; Vol. 5(1), 15-19.

22. W. K. Cheruiyot**, J. K. Tonui** and S. C. Limo, **2016.** Assessment of wind energy potential at kesses region-kenya based on weibull parameters. *Int. J. of Advanced Research, ISSN 2320-5407*, Vol. 4(7), 641-648.

23. Tanui, P.K., Khanna, K.M.,**Tonui, J.K**., Murunga G.S.W., Chelimo L.S., Chelagat, I., Sirma K. K., & Cheruiyot W.K, **2017**. Role of long – range electron - phonon and coulomb interactions in high - Tccuprate superconductors. *Int. J. of Latest Engineering Research and Applications (IJLERA) ISSN: 2455-7137*, Vol. 2(4), 93-99.

24. Masinde F. W., Tanui, P.K., Khanna, K.M., **Tonui, J.K**., Murunga G.S.W., Chelimo L.S., Chelagat, I., Sirma K. K., & Cheruiyot W.K., **2017**. Effect of Electric Field on Energy Gap and Transition Temperature of a YBCO Superconductor. Int. J. of Latest Engineering Research and Applications (IJLERA) ISSN: 2455-7137, Vol. 02 (08), 57-60.

25. Chelagat, I., Tanui, P.K., Khanna, K.M., **Tonui, J.K**., Murunga G.S.W., Chelimo L.S., Sirma K. K., Cheruiyot W.K. &Masinde F. W, **2017**. Interacting Bose gas and quantum depletion *Int. J. Scientific Research Engineering & Technology* (IJSRET), ISSN 2278 – 0882, Vol. 6 (9), 922-926.

26. Koech R.K., **Tonui J.K**., Nyayieka R.O., Macharia P.K, **2017**. Assessment of the efficacy and impacts of Agrochemical and Food Company Ltd's waste water treatment plant on the quality of water in the river Nyando, Kenya. *Int. J. water research*, ISSN 2348-2710, Vol. 7(2), 48-52.

27. J. K. Chelanga, **J. K. Tonui**, S. C. Limo, (2018). Evaluation of Performance of a Solar Tunnel Crop Dryer in Drying of Two African Indigenous Vegetables (AIVs). *Kabarak j. res. innov*. Vol. 5(2) pp 100-114.

28. Namwetako J.S, **Tonui J.K**, Tanui P.K, Khanna M.K, (2018). Solid ${}^{4}_{2}He$ and zero-point energy. *Phys. Astron. Int. J*., Vol. 2(2). Pp. 65-66.

29. Namwetako J.S, **Tonui J.K**, Tanui P.K, Khanna M.K, (2018). Many-Body Theory of Solids ${}^{4}_{2}He$. *Int. J. Scientific Research Engineering & Technology* (IJSRET), ISSN 2278 – 0882, Vol. 7 (2), 83-86.

30. Khanna K.M, Obota, S.E, and **Tonui, J.K,** (2019). Canonical Transformation for a Mixture of Bosons and Fermions. *J. Scientific Israel – Technological Advantages*, Vol.21(5,6).

31. Wilkins K. Cheruiyot , **Joel K. Tonui** and Samuel C. Limo, (2021). Performance Evaluation of 780 Wp Rooftop Solar PV Power Backup System in Western Kenya. *Journal of Energy Research and Reviews,* Vol. 8(1): 1-9, 2021; Article no.JENRR.69982 ISSN: 2581-8368

(b) <u>Conferences Proceedings:</u>

1. Y. Tripanagnostopoulos, S. Tselepis, M. Souliotis, **J.K Tonui**, 2004. Design aspect of photovoltaic/ thermal system. *19th European PV solar energy conference, June 7-11, 2004, Paris, Franc, pp.2321-2324.*

2. Y. Tripanagnostopoulos, A. Christodoulou, S. Tselepis, M. Souliotis, and **J. K. Tonui**, 2004. Practical aspects for small wind turbine applications. *Proc. European wind energy conference & Exhibition*, 22-25 November, London, UK. **CD**

3. **J.K Tonui**, Y. Tripanagnostopoulos, 2005. Ventilation benefit accrued from PV installation in building. *Proc. PALNEC conference 19-21 May, 2005, Santorini, Greece, pp.861-866.*

4. Y. Tripanagnostopoulos, Ch. Siabekou, **Tonui J.K**, 2005. The Fresnel lens concept for solar control of buildings. *Proc. PALNEC conference 19-21 May, 2005, Santorini, Greece, pp.977-982.*

5. **J.K. Tonui**, Y. Tripanagnostopoulos, 2005. Improved performance PV/T air solar systems. *Proc. 20th European PV solar energy conference, June 6-10, 2005, Barcelona, Spain.* **CD.**

6. Ι. Τρυπαναγνωστόπουλος, Σ. Τσελεπής, Μ. Σουλιώτης, **J. K. Tonui**, 2005. Σχεδίαση και οικονομικά στοιχεία για υβριδικά φωτοβολταϊκα/θερμικά ηλιακά συστήματα. *3^{0} Εθνικό Συνέδριο RENES 2005*, Φεβρουαρίου 23-25, Αθήνα, Greece, pp. 633-640.

7. **J.K. Tonui**, Y. Tripanagnostopoulos, 2006. Theoretical results on the performance of improved PV/T solar air systems. *Proc. WREC IX conf., August 19-25, Florence Italy,* **CD.**

8. **J.K. Tonui**, Y. Tripanagnostopoulos, 2006, Performance results of improved PV/T air solar collectors. *Proc. 21st European PV solar conf., September 4-8, Dresden, Germany,* **CD**.

9. **J.K. Tonui**, Y. Tripanagnostopoulos, 2007. Models for improved PV/T air solar collectors. *Proc. 22nd European PV solar conf., September 4-8, Milan, Italy,* **CD**.

10. Y. Tripanagnostopoulos, P. Themelis and **J.K. Tonui,** 2008. Natural flow building integrated air-cooled photovoltaics. *Proc. 23rd European PV solar conf., September 4-8, Valencia, Spain.***CD**

11. **J.K. Tonui** and S.K Rotich, **2009**. Photovoltaic/Thermal (PV/T) collector- production of heat as added value to electricity generation from PV module. *Pro. 1st international conference on solar energy materials research, material science and solar energy network for eastern and southern Africa,* 13th – 15th October 2009, Belinda Oceanic Resort Hotel, Dar es Salam, Tanzania, CD.

12. S.K Rotich, P.K Talam and **J.K. Tonui**, **2009**. Enhancing TV signal selectivity in fringe areas. *Proc. 5th Moi University Annual Conference, August 4th – 8th, 2009,* Eldoret Kenya.

13. S.K Rotich, **J.K. Tonui**, J.G Smith and A Evans, **2009**. A novel technique of coupling light into solar cells at small glazing angles. *Proc. 5th Moi University Annual Conference, August 4th – 8th, 2009*, Eldoret Kenya.
14. **J.K. Tonui,** J.K Rotich, K. Lagat, S.K Rotich and P.K Korir, **2010**. Experimental study of thermal stratification in an improvised water storage tank of a thermosiphon SWH system. *Proc. 6th Moi University Annual Conference (school of engineering), August 3rd – 6th, 2010*, Eldoret Kenya, pp. 355-365.
15. J.K Maritim, P.K Tanui and **J.K. Tonui, 2010**. Solar radiation on horizontal surfaces over Eldoret and Kitale. *Proc. 6th Moi University Annual Conference, August 3rd – 6th, 2010*, Eldoret Kenya.
16. S.K Rotich, D.K Choge and **J.K. Tonui, 2010**. Wind power analysis and site matching of small wind turbine generators in Eldoret, Kenya. *Proc. 6th Moi University Annual Conference, August 3rd – 6th, 2010*, Eldoret Kenya.
17. R.K Koech, **J.K Tonui,** S.K Rotich and P.K Torongey, **2011**. Modelling of Natural Flow Air-Type PV/T Collector. *Proc. 1st International Conference, Eldoret Polytechnic, May 2011*, Eldoret Kenya.
18. R.K Koech, **J.K Tonui,** S.K Rotich and P.K Torongey, **2011**. Parametric studies of PV/T solar air Collector under natural flow mode. *Proc. 7th Moi University Annual Conference, September 6th – 9th, 2011*, Eldoret Kenya.
19. R.K Koech, **J.K Tonui,** S.K Rotich and P.K Torongey, **2012**. Performance analysis of a PV/T air systems based on heat transfer perspective. *Proc. 1st Rift Valley Technical Institute Annual Conference, June 14th-15th, 2012*, Eldoret Kenya.
20. Ondieki H. O, **Tonui J. K**., Rotich S. K and Torongey P.K, **2012**. Theoretical Analysis of a Solar Air Collector with a Rectangular Air-duct Profile. *Proc. 1st Rift Valley Technical Institute Annual Conference, June 14th-15th, 2012*, Eldoret Kenya.
21. **Tonui J.K**, **2017**. Solar sludge drying: Experimental tests on feasibility of producing biosolids at ACFC wastewater treatment works. *Paper presented orally on the 6th NACOSTI National Science Week, 22nd – 26th May, 2017, KICC, Nairobi, Kenya.*

(c) Theses:

1. **J.K. Tonui**, 1998. Design and development of PV panel controller for rural application. *M.Phil Thesis, Moi University Eldoret, Kenya*.
2. **J.K. Tonui**, 2006. Hybrid Photovoltaic/Thermal Solar Energy Systems. *Ph.D Thesis, University of Patras, Greece.*

11. Research Grants:

1. **KSh. 6 000 000 –** awarded in the 4th ST&I Research Grants at NCST for 2011/2012 financial year. P.K Ndalut, **J.K Tonui**, E.K Bore and H.K Sitienei, **2011**. Application of Solar Energy for Drying of Molasses Wastewater at Agrochemical and Food Company (ACFC Ltd) Muhoroni**.**
2. **KSh. 5 000 000 –** research grand on **operational space weather,** awarded as a consortium of three universities (University of Eldoret, Taita-Taveta University and Dedan Kimathi University of Science and Technology) by Kenya Space Agency, October 2020.

12. Conferences Attended:

1)	Nov/Dec 1996:	4th college on the basic VLSI design techniques Abdus Salam International Center for Theoretical Physics (ICTP), Trieste, Italy.
2)	January 2004:	PV/T-Catapult Road Map European Commission Project meeting at the Energy Center of Netherlands (ECN), Pattern.
3)	7-11 July, 2004;	19th European PV solar energy international conference, Paris,

France.

4) 1-10 July, 2004: Summer College on Intensive Training on the Photovoltaic Engineering, Technical Education Institute (T.E.I), Patras, Greece,
5) 19-21 May, 2005: International conference on Passive and Low Energy Cooling for the Built Environment, Palnec2005, Santorini Island, Greece.
6) 6-10 June, 2005: 20th European PV solar energy international conference, Barcelona, Spain.
7) 5-10 June 2006: International conference on 'Science and Culture' at the Cultural Capital of Europe- Patras 2006, Patras, Greece.
8) 19-25 August, 2006: World Renewable Energy Congress (WREC) IX and exhibition, Florence, Italy.
9) 4-8 May, 2009: 2nd national conference on research and results dissemination organized by NCST, May 4-8, 2009 at KICC, Nairobi, Kenya
10) 13–15, October 2009: 1st international conference on solar energy materials research, Material science and solar energy network for eastern and southern Africa, , Dar es Salam, Tanzania, CD.
11) 4-8, August, 2009: 5th Moi University Annual International Conference, Eldoret, Kenya.
12) 7-11, September, 2010: *6*th Moi University Annual International Conference, Eldoret, Kenya.
13) 22-26, May, 2017: 6th NACOSTI National Science Week, KICC, Nairobi, Kenya.
14) 24-25, February, 2021 Attended High Level Technical Forum organized by Kenya Space Agency (KSA) to discuss on the theme "The space sector we want in Kenya: A conversation".

13. Referees:

Prof. P. K. Tarus
Registrar, Academic and Student Affairs,
University of Eldoret,
P.O Box 1125, Eldoret, Kenya

Prof. Sam K. Rotich
School of Biological and Physical Sciences, Moi University,
P.O Box 3900, Eldoret, Kenya

Prof. Peter K. Torongey
School of Aerospace Science and Operation, Moi University,
P.O Box 3900, Eldoret, Kenya.

14. Contact Address:

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School of Science, Department of Physics,
P.O Box 1125 – 30100, Eldoret, Kenya
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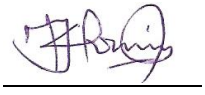

Signature

03/09/2021
Date