

# Paper Submission Form - SAIP2025 Proceedings

Sections A, C, D, and E must be completed by all authors (including students) who submit papers. Section B is compulsory for students who submit manuscript(s).

## Section A: Paper Submission Information

Paper/Abstract ID	149
Paper title	Eigenvalue determination for a Toy and Woods-Saxon potentials using an unsupervised PINN
Corresponding Author Name & Surname:	Tshegofatso Tshipi
Corresponding Author Email Address:	tshegofatso.tshipi@spu.ac.za

## Section B: For Students & Supervisors

Supervisor Name & Surname:	NA
Supervisor Email Address:	NA

For this paper, the supervisor must agree/disagree with the following statements.

	Yes	No
1. I am aware that the above-mentioned paper is being submitted for possible publication in the Proceedings of the SAIP Conference. I am satisfied that the presented work is that of the listed authors. I hereby give consent to the submission		
2. I have proof-read the manuscript		
3. I am satisfied that the manuscript is written in appropriate English and is sufficiently free of grammatical and spelling errors		
4. I am familiar with the required manuscript format ("House Style"), and I am satisfied that this manuscript meets the criteria. I am aware that manuscripts not conforming with House Style may be desk rejected		
5. I am satisfied that the scientific content of this manuscript is of sufficient standard for it to be considered for publication in the Proceedings of the South African Institute of Physics Conference Proceedings		

Student Name & Surname: ..... Signature: ..... Date: .....

Supervisor Name & Surname: ..... Signature: ..... Date: .....

## Section C: Suggested Reviewers

Obtaining the two referee reports necessary for DHET subsidy is an onerous task.

Please provide the names and contact details of three qualified South African and/or international referees. Referees should have a PhD and expertise in the relevant area of Physics. Do not recommend referees who have co-authored a work with any of the authors on the manuscript within the past five (5) years. Manuscripts without three recommended referees may be subject to desk rejection.

Suggested Reviewers in your Research Field (Both local & international)		
	Reviewer Names & Surname	Reviewer's Email Address(es)
Suggested reviewer #1	Dr. Mmusi Gopane	ishmael.gopane@spu.ac.za
Suggested reviewer #2	Prof. Gaotsiwe Rampho	Ramphjg@unisa.ac.za
Suggested reviewer #3	Dr. Vivien Visaya	<a href="mailto:mvisaya@uj.ac.za">mvisaya@uj.ac.za</a>

## Section D: Declaration of Novelty and Use of AI

**How is this submitted manuscript scientifically novel?**

The Physics Informed Neural Network (PINN) has been used to determine two-body eigenpairs for potentials such as the infinite square well and harmonic potential. These potentials are relatively simple and unrealistic. In this manuscript we apply PINN to determine the low-lying eigenpairs for the molecular and Woods-Saxon potentials. These two potentials offer a more realistic representation of the effective nuclear potential since they are short-ranged, have finite width and finally their shapes at the edge changes smoothly.

Please see the Author Guidelines for the AI use policy.

**How was AI used in the generation of this manuscript?**

AI was used to improve readability and language of the introduction section.

## Section E: Plagiarism

	Yes
I am aware that plagiarism detection software may be used on my manuscript.	x