

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	347
Paper title	Search for a new spin-0 scalar and a spin-1 boson using Run2 ATLAS detector data
Corresponding Author Name & Surname:	Xola Mapekula
Corresponding Author Email Address:	xola.mapekula@cern.ch

Section B: For Students & Supervisors

Supervisor Name & Surname:	Simon Connell
Supervisor Email Address:	

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	X	
2. I have proof-read the manuscript	X	
3. I am satisfied that the manuscript is written in appropriate English and is sufficiently free of grammatical and spelling errors	X	
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	X	
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	X	

Student Name & Surname: **Xola Mapekula** Signature:  Date: **30/07/2025**

Supervisor Name & Surname: **si@mykonos.org.za** Signature: Date: **30/07/2025**

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 James Keaveny	james.keaveny@uct.ac.za
Suggested reviewer #2	Dr Deepak Kar	deepak.kar@wits.ac.za
Suggested reviewer #3	Dr Mukesh Kumar	mukesh.kumar@wits.ac.za

Section D: Declaration of Novelty and Use of AI

How is this submitted manuscript scientifically novel?

This manuscript is scientifically novel in that it presents search on the dark higgs, or additional scalar whose mass is different to the mass of the Standard Model Higgs Boson. In this particular manuscript, I present the work we did on the fit of the signal model distributions in both the signal regions. The shape of the signal is affected by the mass of Higgs. In the first signal region, the signal distribution is comensurate with a gaussian peak whilst in the second signal region, the signal shape is assymetric.

in addition, the observed data in the search is plotted in such a way as to compare the average dilepton mass to the resonant invariant four lepton mass. In this plot we show that the data is clustered.

Please see the [Author Guidelines for the AI use policy](#).

How was AI used in the generation of this manuscript?

AI was used to correct the grammar in the manuscript

Section E: Plagiarism

	Yes
I am aware that plagiarism detection software may be used on my manuscript.	<input checked="" type="checkbox"/>