



The Abdus Salam

**International Centre
for Theoretical Physics
Physics Without Frontiers**



UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Promoting Women in Physics in South Africa

Prof Sahal Yacoob
University of Cape Town

Celebrating 10 Years of Physics Without Frontiers
22th November 2022

South Africa



Images from [LonelyPlanet.com](https://www.lonelyplanet.com)

- Population: 55.6 Million (2016)
 - **update:** 60.6 Million (2022 prelim)
- 51% female
- 36.2 % between 15 and 34
- Access to Water: 85% (households)
- Access to Electricity 90% (households)
- First Democratic Election — 1994
- 8.1 % White
- 19.9% cannot afford food (households)
- 25 - 35% unemployment
- 54% below the poverty line

Women in Education in South Africa

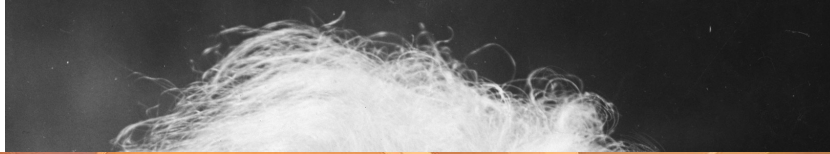
- South Africa is still predominantly patriarchal
 - preference generally given to males
 - Many official policies in place encourage previously disadvantaged groups
- In 2011:
 - 17% of University leadership were women (SET)
 - 21% of Full Professors (SET)
 - 40-44% of Natural and Agricultural Science Doctoral graduates are female
 - 15-17 % Engineering Science, Materials and Technologies doctoral graduates

Diversity in Physics Academia

- Completely Anecdotal: I have been employed at two South African Universities:

Institute	A	B
Women	0/10	1/15
non-white South Africans	2/10 1/10	2/15 0/15

Encouraging a change



- How does one picture a

Photo credit: Gregor Leigh

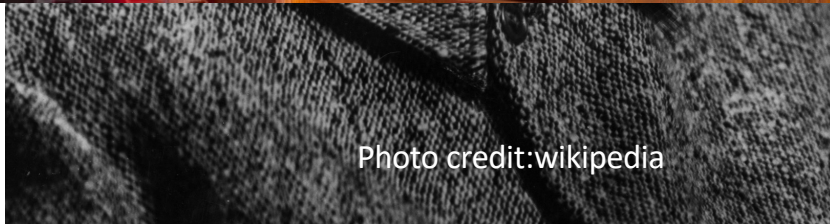
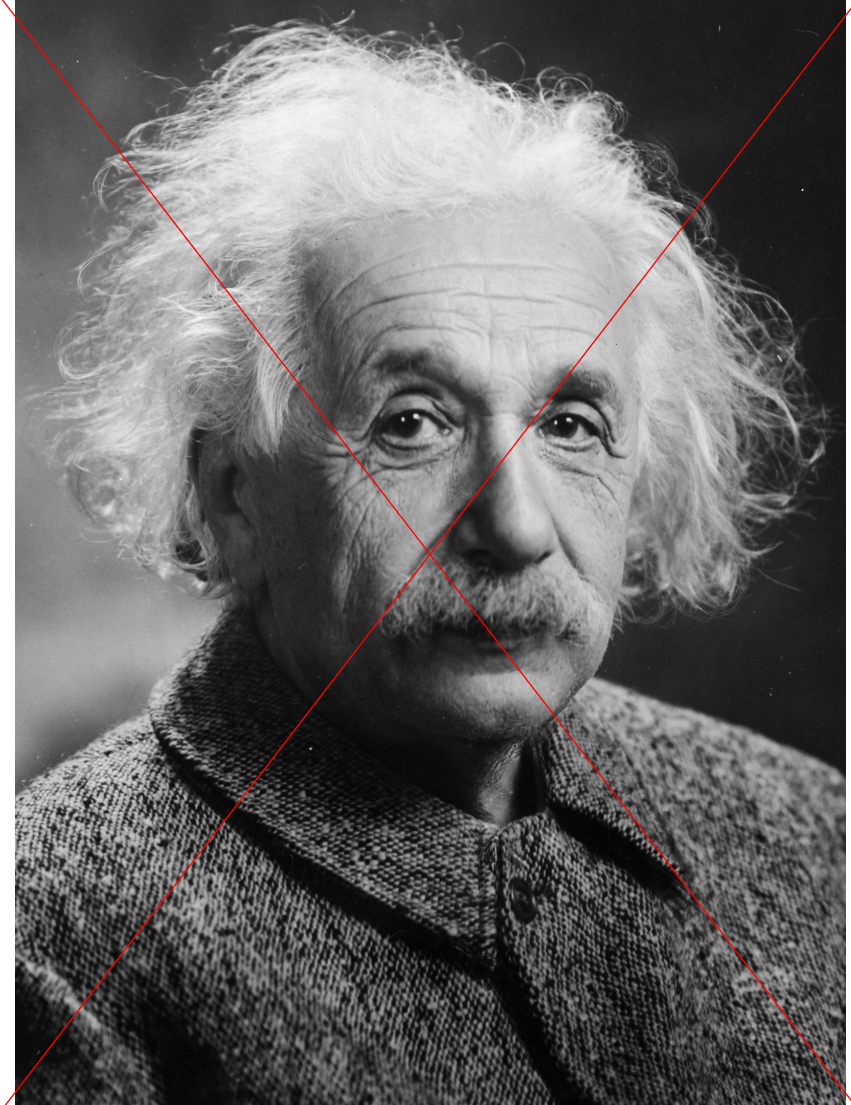


Photo credit:wikipedia

The idea:

- Let's expose scholars to images that they can relate better to: That look more like them
 - Younger
 - More diverse
- Create and distribute posters of women who have university degrees majoring in physics



Our 7 Stars



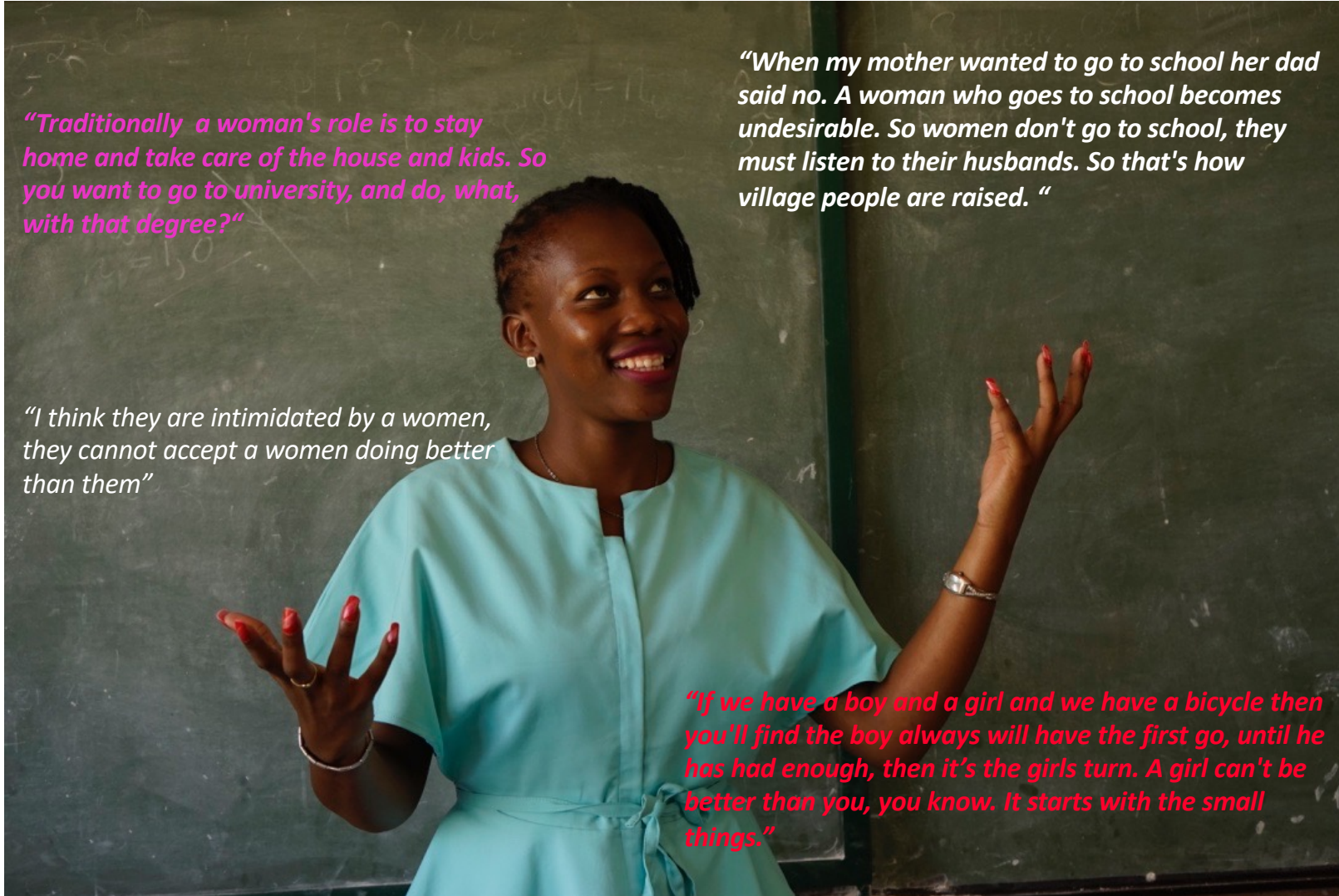
Some Quotes

"Traditionally a woman's role is to stay home and take care of the house and kids. So you want to go to university, and do, what, with that degree?"

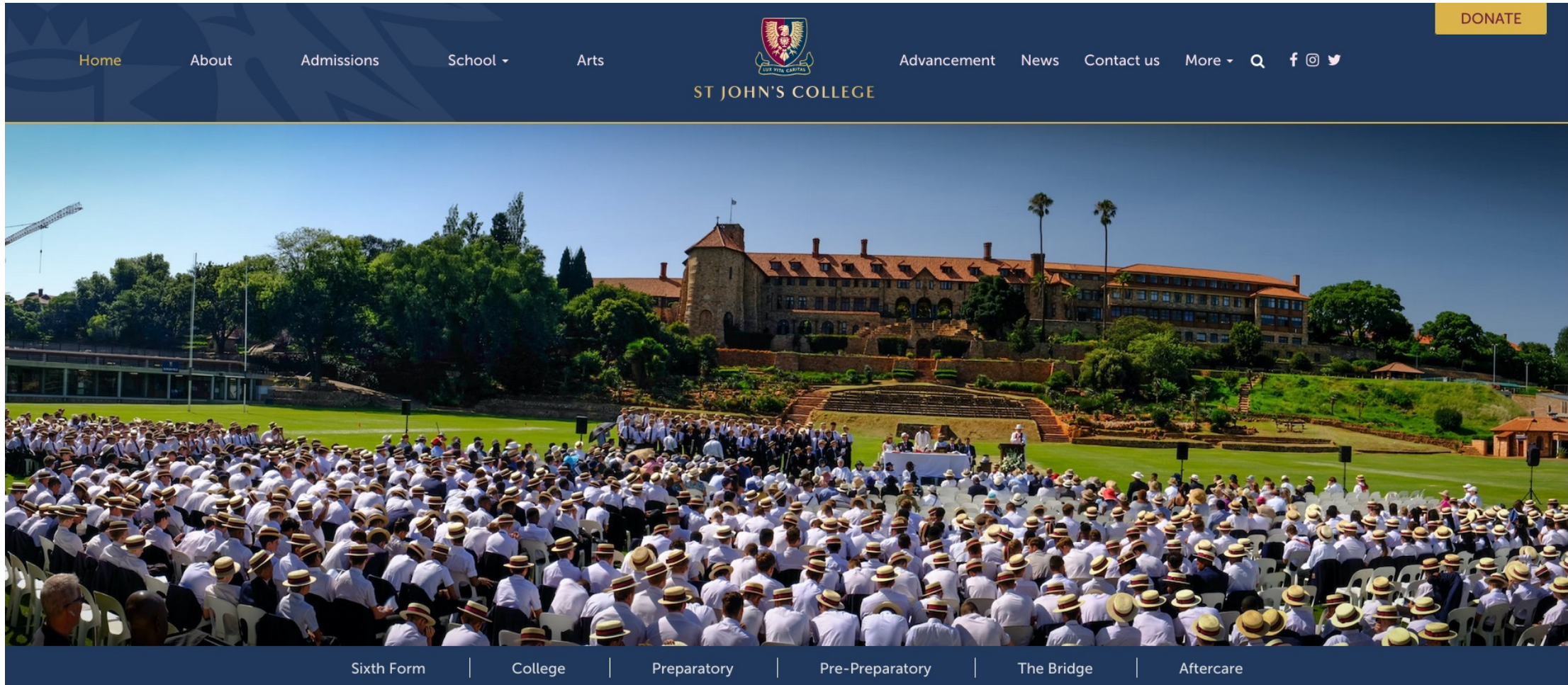
"I think they are intimidated by a women, they cannot accept a women doing better than them"

"When my mother wanted to go to school her dad said no. A woman who goes to school becomes undesirable. So women don't go to school, they must listen to their husbands. So that's how village people are raised. "

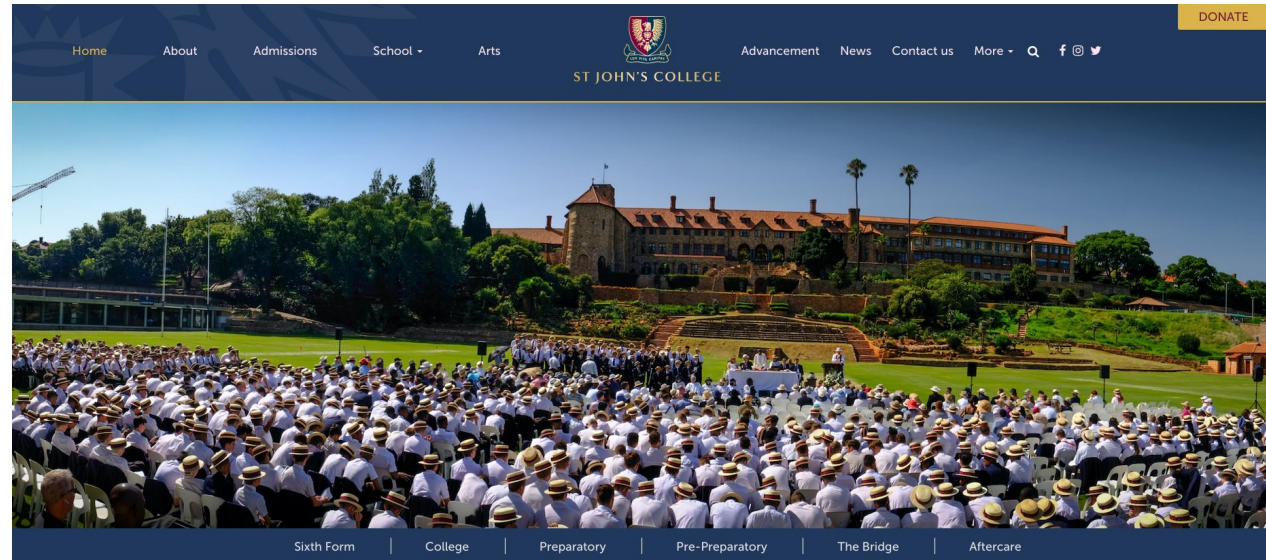
"If we have a boy and a girl and we have a bicycle then you'll find the boy always will have the first go, until he has had enough, then it's the girls turn. A girl can't be better than you, you know. It starts with the small things."



South Africa – no longer segregated by Law, still segregated by opportunity



South Africa – no longer segregated by Law, still segregated by opportunity



- January 2014: Five-year-old Michael Komape drowned in a pit toilet at Mahlodumela Primary School in Limpopo.
- March 2018 : Five-year-old Lumka Mkhethwa drowned in a pit latrine at Luna Primary School in the Eastern Cape province
- 2013: Seven-year-old Lister Magongwa died after the walls of a toilet collapsed on him at Mmushi Primary School in Limpopo.
- 2016: Five-year-old Oratilwe Dilwane fell into a pit latrine at Tlhotlheletsang Primary School in North West province. He swallowed excrement and was severely injured.
- 2017 Six-year-old Siyamthanda Mtunu died after the walls of a toilet collapsed on him at Dalasile Primary School in the Eastern Cape.

Impact

Unable to assess

- The Posters have been used often online and in SA
 - Particularly on Women's Day, and days in support of Women / Diversity in Stem
- A plan for assessment of impact was designed
 - We were unable to handle the administration aligned with obtaining consent from minors
- 50 sets of the posters have been printed and are deployed across schools of all socioeconomic levels in the Gauteng Province
 - Biased towards engaged teaching staff.

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You do what you must
to achieve your dreams!
It's probably not going
to be easy, but if it's
what you want to do,
then it's worth it.

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Credits: Kate
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Tana Joseph

Astronomy, University of Cape Town

Tana Joseph is a Radio Astronomer at the University of Cape Town. As part of her research she studies black holes outside of our galaxy which emit X-Ray radiation.

Credits: Kate Shaw, Sahal Yacoob, and Nicola Quadri, in partnership with the South African Institute of Physics via Women in Physics in South Africa (WiPISA)



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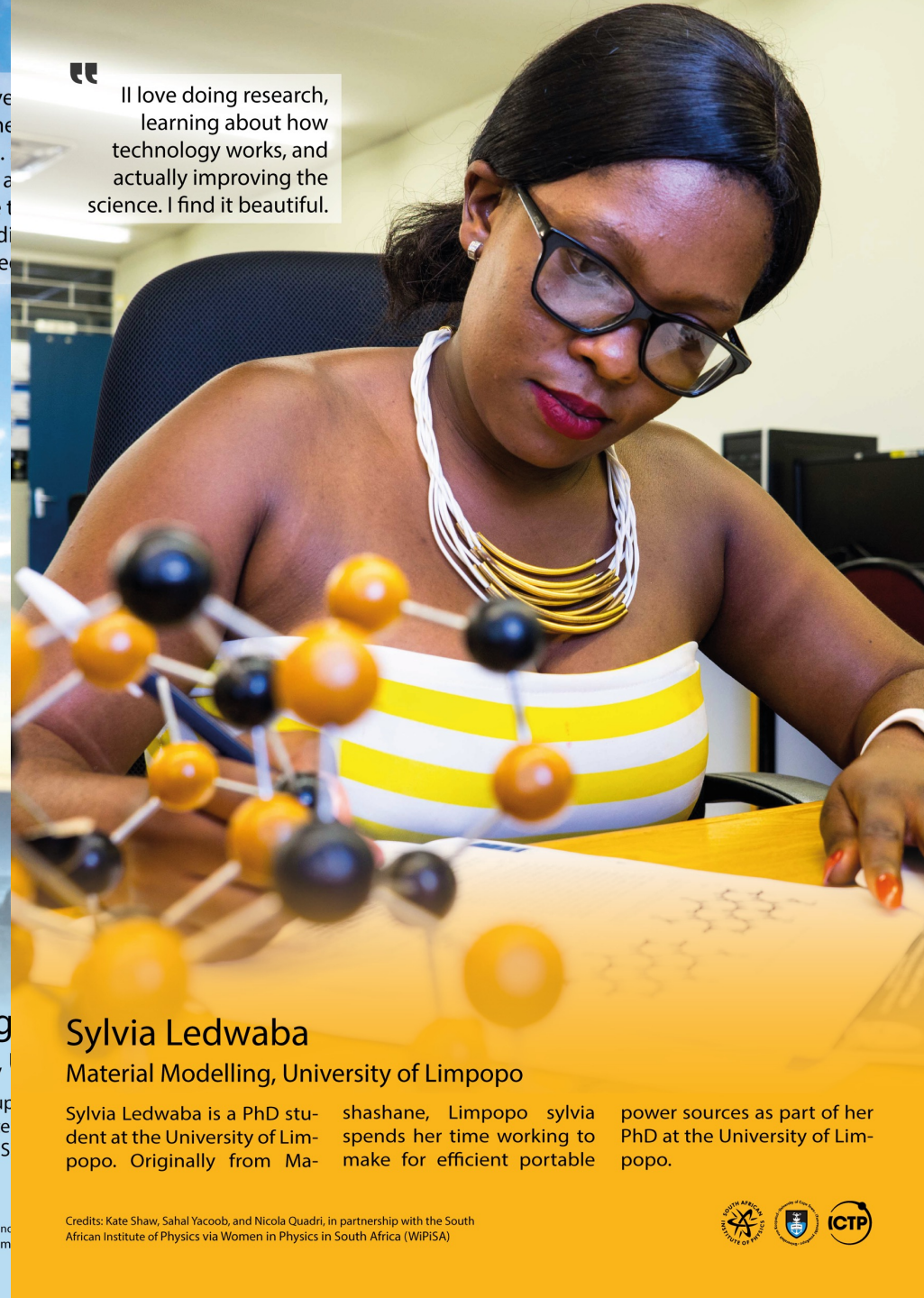
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Hester Burger
Medical Physics, I

Hester Burger grew up
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and completed her MS

Credits: Kate Shaw, Sahal Yacoob, and
African Institute of Physics via Women

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I love doing research,
learning about how
technology works, and
actually improving the
science. I find it beautiful.



Sylvia Ledwaba
Material Modelling, University of Limpopo

Sylvia Ledwaba is a PhD student at the University of Limpopo. Originally from Mashashane, Limpopo, sylvia spends her time working to make for efficient portable

Credits: Kate Shaw, Sahal Yacoob, and Nicola Quadri, in partnership with the South African Institute of Physics via Women in Physics in South Africa (WiPISA)



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Hester Burger
Medical Physics, University of Cape Town

Hester Burger grew up in Stutterheim in the Eastern Cape and completed her MSc degree in Medical Physics at UCT. She is Head of Division of Physics at UCT.



“ My grandfather used to take me to the library every week. And I always made sure that at least one of the books I took was a science book. ”

Riona Ramraj
Astronomy, University of Cape Town

Originally from Pietermaritzburg, Riona Ramraj is a PHD candidate from the University of Cape Town working on the details of the light emitted from the brightest part at the centre of a galaxy (the Active Galactic Nucleus) in order to determine their nature and evolution.

Credits: Kate Shaw, Sahal Yacoob, and Nicola Quadri, in partnership with the South African Institute of Physics via Women in Physics in South Africa (WiPISA)

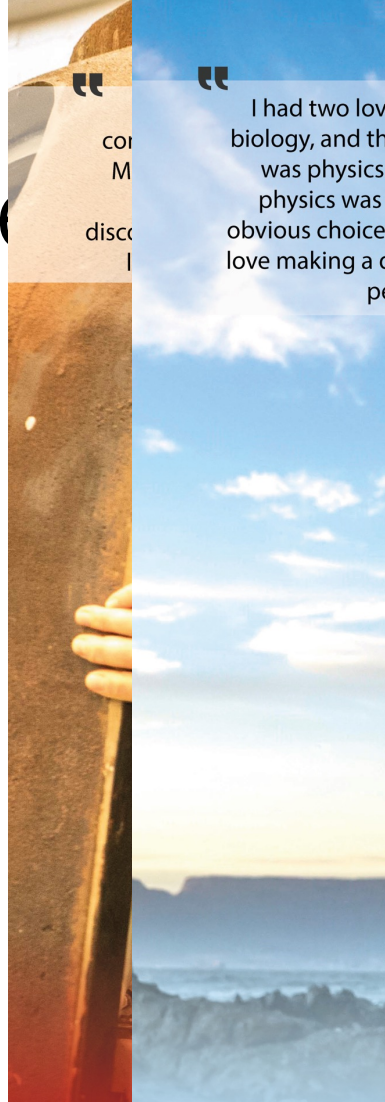


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I have a burning
interest in science
and the success of
science in South
Africa.”

Igle Gledhill
Fluid Dynamics, Centre of Scientific and Industrial Research

Igle Gledhill studies the aerodynamics of agile aircraft for the CSIR. She is from Grahamstown. An expert in fluid dynamics, Igle has studied a wide range of problems ranging from molecular treatments of TB and HIV to the Space Shuttle.

Credits: Kate Shaw, Sahal Yacoob, and Nicola Quadri, in partnership with the South African Institute of Physics via Women in Physics in South Africa (WiPISA)



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emission control technology.



The

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I hope one day to continue my research on Mars, and possibly even contribute to the discovery of evidence that life once existed there.

Adriana Marais

Open Quantum Systems, University of KwaZulu-Natal

Adriana Marais is a theoretical physicist with the University of KwaZulu-Natal, and

Credits: Kate Shaw, Sahal Yacoob, and Nicola Quadri, in partnership with the South African Institute of Physics via Women in Physics in South Africa (WiPISA)

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I had two loves. One was biology, and the other one was physics. So medical physics was actually the obvious choice to go into, I love making a difference in peoples' lives.

Hester Burger

Medical Physics, University of Cape Town / Groote Schuur

Hester Burger grew up in Stutterheim in the Eastern Cape and completed her MSc degree in Medical Physics in 1997. She is Head of Division for Medical Physics at UCT / Groote Schuur Hospital and spends her time trying to make a difference in the lives of cancer patients.

Credits: Kate Shaw, Sahal Yacoob, and Nicola Quadri, in partnership with the South African Institute of Physics via Women in Physics in South Africa (WiPISA)

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Credits: Kate Shaw, Sahal Yacoob, and
African Institute of Physics via Women

Hellen Chuma
Material Modelling, University of Limpopo

Hellen Chuma is from Makgofe, at the university of Limpopo palladium as a catalyst for
Limpopo. She is a PhD student where she studies the use of emission control technology.

Credits: Kate Shaw, Sahal Yacoob, and Nicola Quadri, in partnership with the South
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The Results

“ I hope one day to continue my research on Mars, and possibly even contribute to the discovery of evidence that life once existed there.”



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Adriana Marais is a theoretical physicist with the University of KwaZulu-Natal, and

investigates quantum mechanical effects in biological systems. She is currently stri-

ving to be one of the pioneers to establish a colony on Mars.

Credits: Kate Shaw, Sahal Yacoob, and Nicola Quadri, in partnership with the South African Institute of Physics via Women in Physics in South Africa (WiPISA)

