

# iThemba LABS :

## 2017-2022 : Implementing the LRP



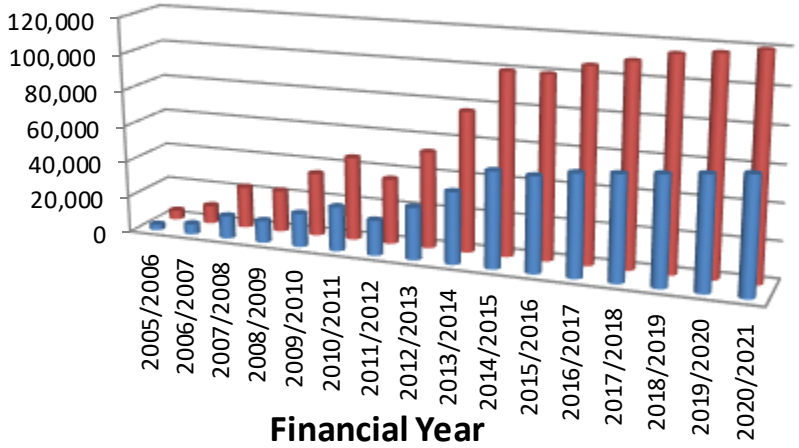
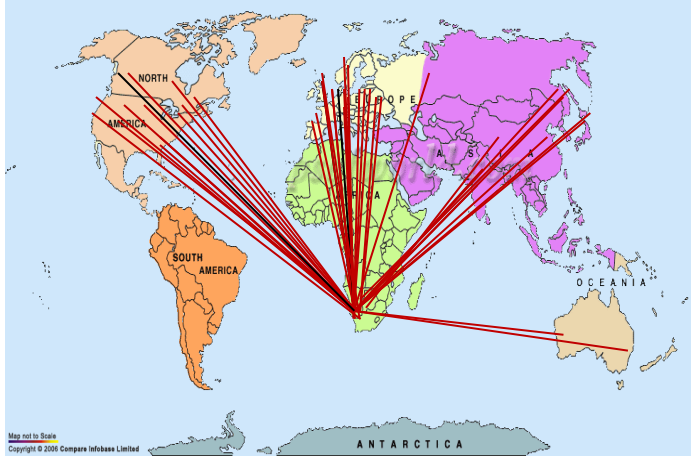
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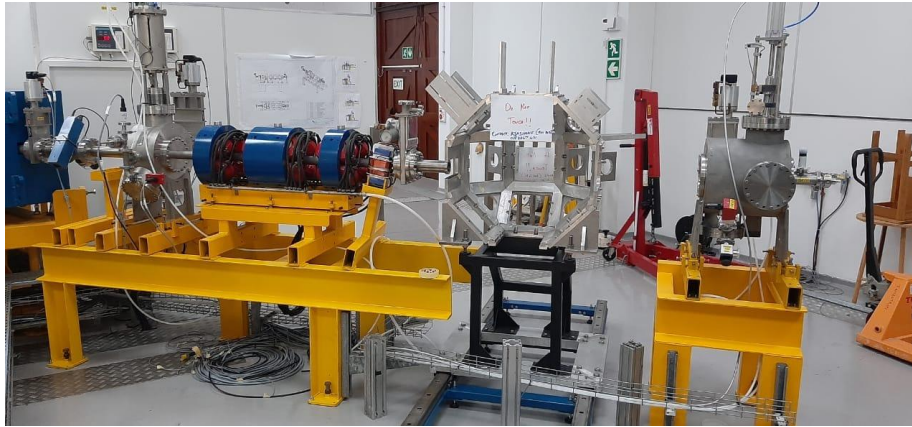


# iThemba LABS: Laboratories for Accelerator Based Sciences

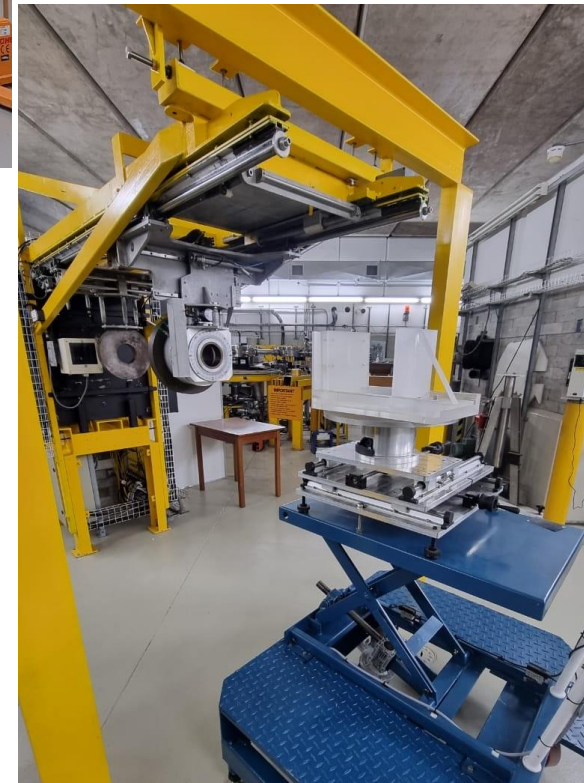


# Recent projects completion (despite Covid19)

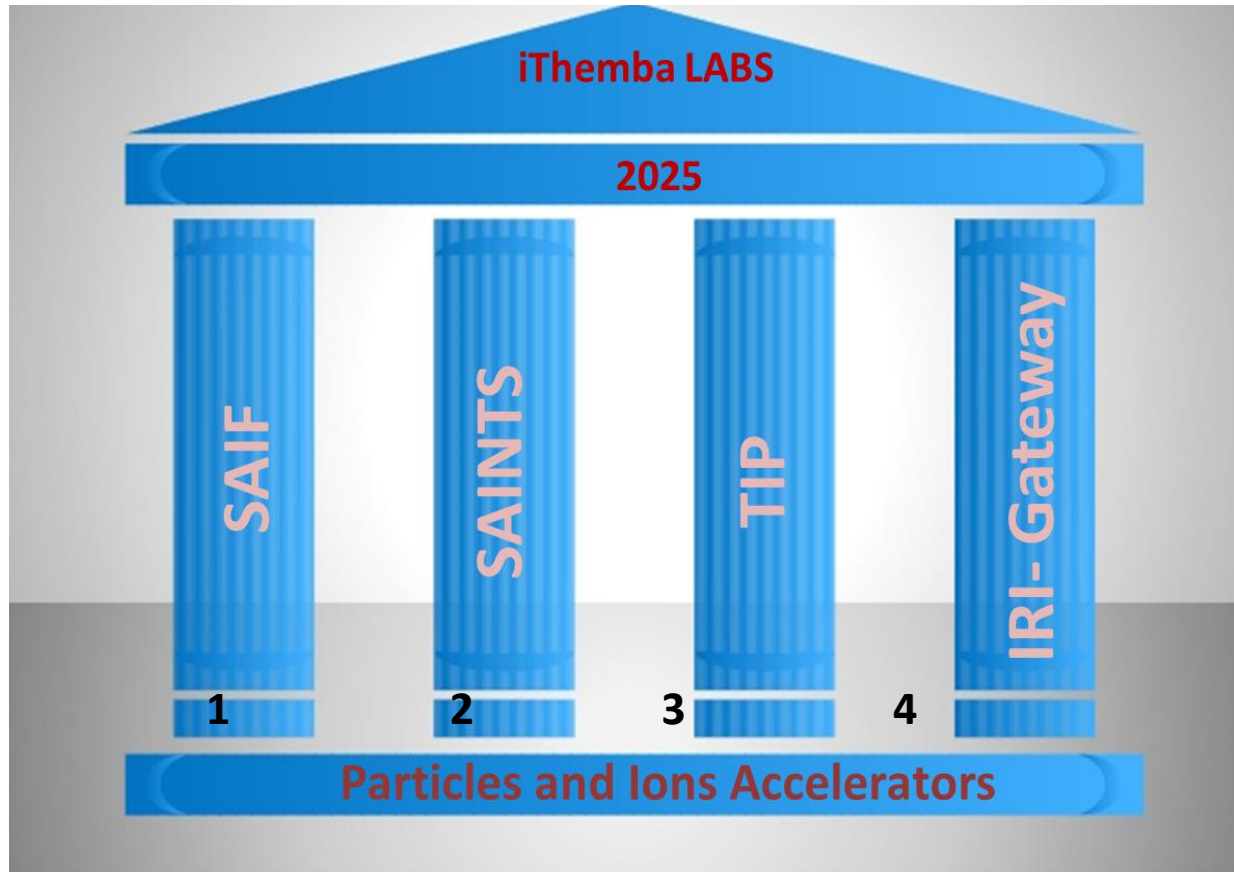
-New Nuclear Astrophysics beam line at the Tandetron Laboratory



-New Radiation Bio-Physics beam line at the SSC Laboratory

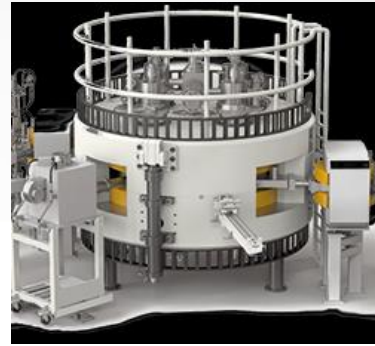
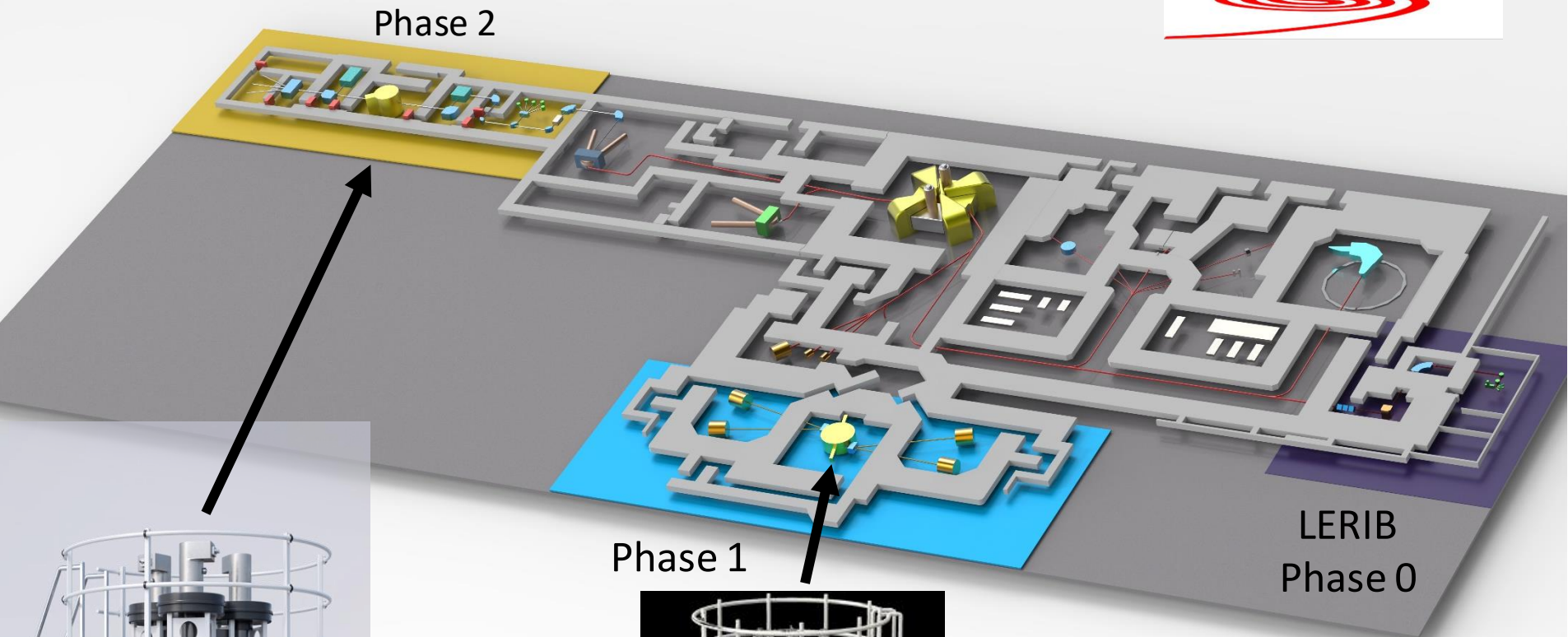


# The pillars of the iThemba LABS Long Range Plan



1. Science
2. Training
3. Technology
4. Access to Research Infrastructure

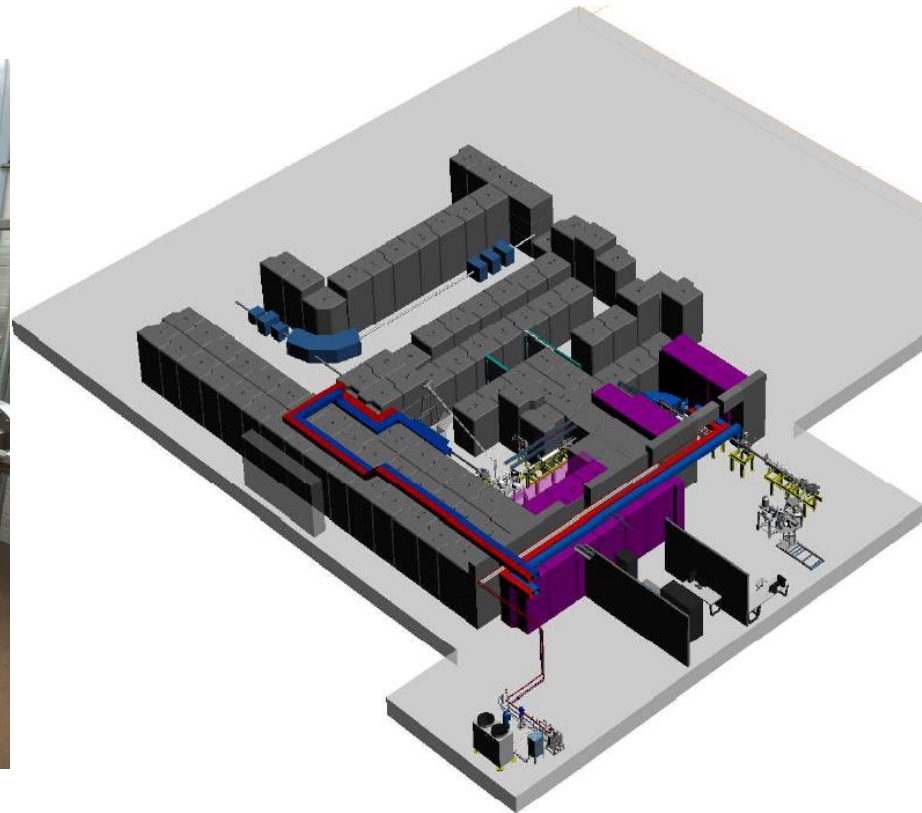
The envisioned success of our Long Range Plan pillars remain heavily dependent on a strong and durable tradition of sound, mutually beneficial international collaborations



# Implementation LERIB phase 0 : STARTED 2020



Target/Ion-Source/Separator



Building completed end 2022

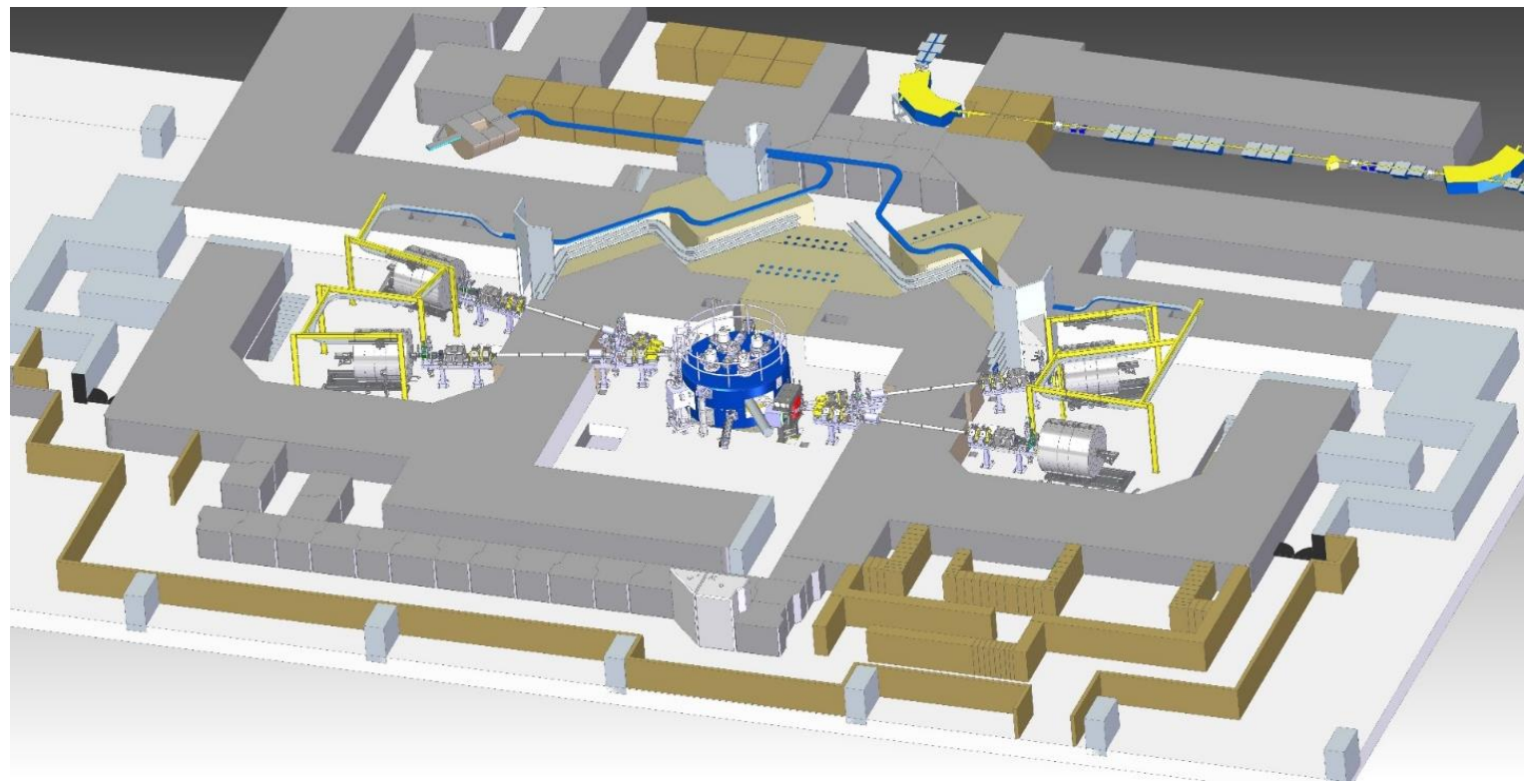
**Matthew Sega** (a promising Early Carrier researcher)

# iThemba LABS: South African Isotope Facility – Phase 1



**Implementation STARTED SEP 2019:**

- 70 MeV cyclotron
- New beamlines
- New target stations
- New buildings for utility services, waste disposal
- Regulatory licensing



# Installation of C70 cyclotron and beam transport lines

- Rigging into the TC vault completed on 14 Apr 2022
- Beam line equipment installed in cyclotron vault and both target vaults with water cooling manifolds
- Alignment of cyclotron and beam line equipment completed





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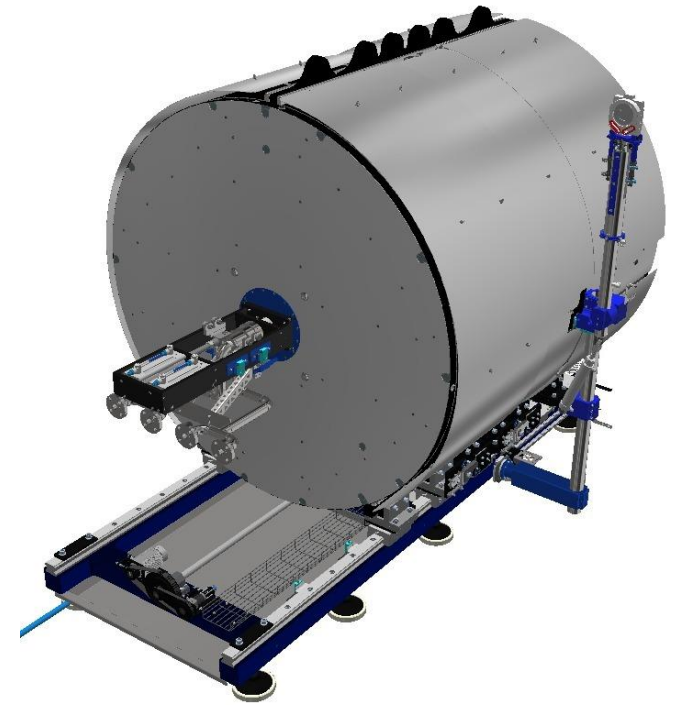


# iThemba LABS: South African Isotope Facility – Phase 1



## Target Systems

- Provide local radiation shielding (steel, lead, borated wax)
- Accommodate solid targets of Sr and Ga in tandem
- Water-cooled target capsules (up to 26 kW heat removal)
- Helium-cooled vacuum window
- Robotic transfer of target from target stations to chemical processing facility



## Infrastructure:

### Electrical

- New transformers, MV and LV switchgear installed
- RUPS passed factory acceptance testing 24 May 2022
- Feeder cable upgrade: tender advertised for contractor appointment

### Mechanical

- New chiller plant installed, being commissioned
- HVAC ducting 80% completed
- Air handling units for vault areas installed
- Water cooling reticulation in progress
- Target cooling systems prepared for installation in August

### Power supply room / Control room / Change rooms

- Power supply room completed, IBA equipment installed
- Control room area completed
- Blue area change rooms completed
- Pump room completed



# iThemba LABS: South African Isotope Facility – Phase1



## Infrastructure:

Waste management building



## Remaining work:

Activity	Completion date
Commission central services (HVAC, cooling systems, electrical power)	Jul 2022
C70 cyclotron: Final assembly of mechanical/electrical systems	June 2022
C70 cyclotron: RF start	Aug 2022
<b>C70 cyclotron: First beam extraction</b>	<b>Oct 2022</b>
Complete radioactive waste handling facility	Oct 2022
Install 2x target stations	Oct 2022
C70 cyclotron: Beam transport line commissioning	Nov 2022
<b>Complete regulatory licensing process &amp; Radioisotope production start</b>	<b>Mar 2023</b>

# TIP: Technology and Innovation Platform

## Vision

- Developing innovative technology skills and know-how
- Sharing of technology with other Facilities and universities
- Transfer of technology to industry



Building completed September 2022



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# SAINTS: The South African Institute of Nuclear Technology and Science

First graduations : Master in 2022 and PhD in 2023



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# IAEA Collaborating Centre (November 2021)



## Creation of APACC African Particle Accelerator Collaboration Committee (February 2022)





**Inauguration of SAIF phase1**

**Year of Basic Sciences for Sustainable development**

**100 years of IUPAP**

**100 years since Bohr's Nobel Prize**



**We look forward to see you in Cape Town!**



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The President of IUPAP, the Chair of the C12 and the Chair of INPC agreed on the following resolution:

**Given the situation of the Russian invasion of Ukraine, and in relation to the celebration of the centenary of IUPAP, INPC2022 invites all participants to sign «*an IUPAP declaration that they are not actively supporting war and are committed to democratic principles for resolving disagreements and conflicts*» and display an IUPAP affiliation during the conference.**