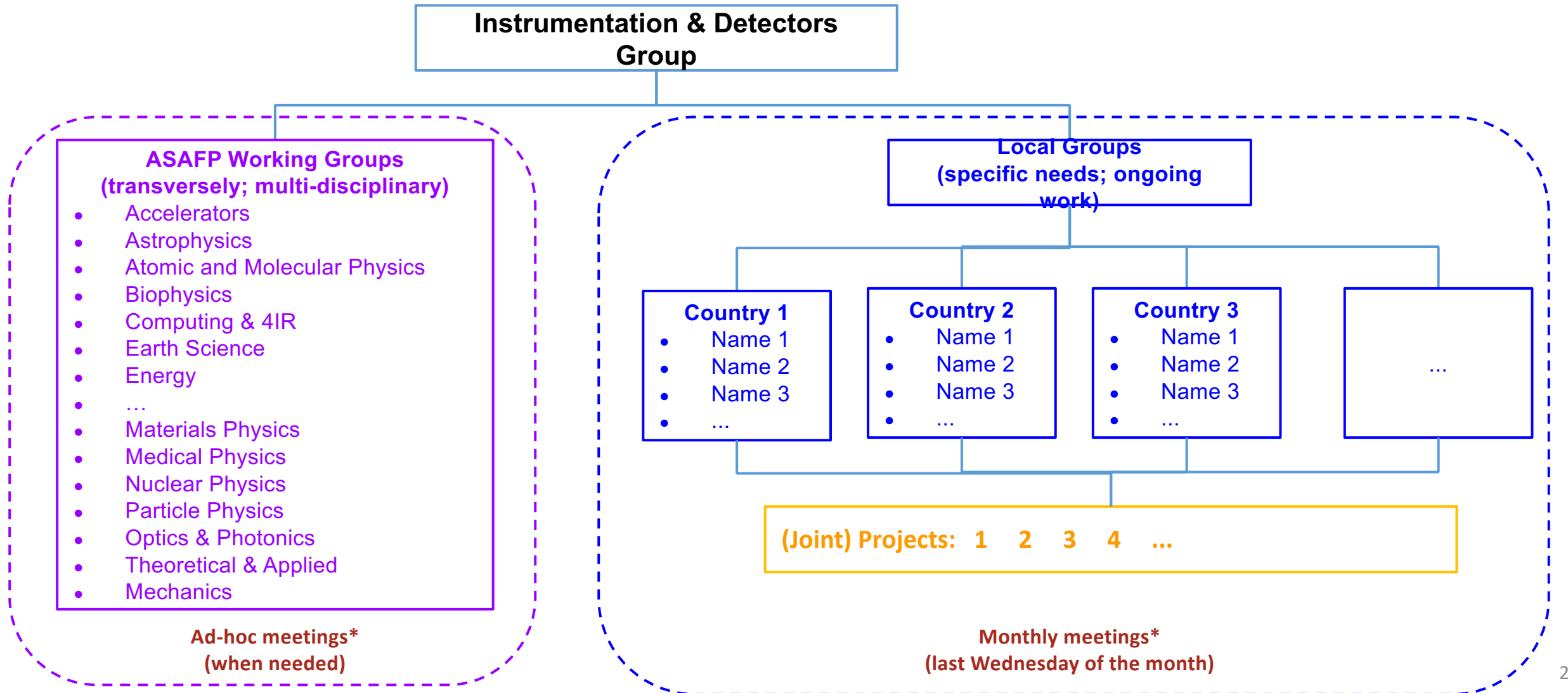


ASFAP Instrumentation and Detector Working Group ***(IDWG)***

Open Meeting, 17 November 2021

- ASFAP: Letters of Interest (LOI) concerning all domains related to physics in Africa
- Today: Collecting and structuring information on existing facilities and projects in instrumentation
- Goal: identify those projects and encourage them to mature to LOIs and realistic proposals
- Need help by other working groups to identify communities
- At townhall meeting in July several existing activities and facilities were mentioned (see following pages).

Status (Reminder of July 12, 2021)



New Possible Projects - Capacity Building & LOIs

- **New facilities (carried by more than 1 country)**
 - Detector labs: R&D, radiation detectors ...
 - FEM/TEM, laser systems ...
 - DAQ systems ...
 - (Reliable) Internet access ...
 - ...
- **Training laboratories for education**
 - Universities
 - Hospitals
 - Pre-college
 - ...
- **LOI carried by IDWG itself?**
 - Synchrotron Light Source
 - Square Kilometer Array
 - African Laser Light Source

Existing projects and facilities in Africa, incomplete (!! list: (partially collected from the talks at the townhall meeting in July 2021)

Algeria: Center for Development of Advanced Technologies (CDAT)

Morocco: Centre National de l'Énergie, des Sciences et des Techniques Nucléaires (CNESTEN)

Senegal: Radiocarbon laboratory of the Institut Fondamentale d'Afrique Noire (IFAN)

Nigeria: Centre for Energy Research and Development (CERD)

- 1.7 MV Tandem Pelletron Accelerator
- Research Platforms at CERD
 - Ion Beam Analysis (IBA)
 - Positron-induced x-ray emission (PIXE)
 - Rutherford Backscattering (RBS)
 - Elastic recoil detection analysis (ERDA)

South Africa

- iThemba Laboratory for Accelerator Based Science (LABS)
- University of Pretoria.
 - 2 MV Van de Graaff Accelerator.
 - RBS, NRA and Channeling experiments
 - Implantation in semiconductor material

Namibia (HESS)

iThemba LABS

iThemba LABS Accelerators:

- 200 MeV Separated Sector Cyclotrons
- 11 MeV and 8 MeV Solid Pole injector Cyclotrons
- 3 MV Tandatron Facility
- 6 MV Tandem Accelerator for AMS Facility
- 11 MeV Siemens Accelerator for FDG Facility
- Recently procured the C70 cyclotron for South African Isotope Facility (SAIF)
- Separated Sector Cyclotron (SSC) Laboratory

iThemba LABS Research Infrastructures/Platforms

- Nuclear Physics: structure, reactions and astrophysics
- Neutron Physics
- Nuclear Data and Radioactivity Measurements
- Radiation Biophysics
- R&D in Accelerator Based Radioisotopes
- Tandem Laboratory
 - Ion Beams Application
 - Very Low Energy Nuclear Physics
 - Accelerator mass Spectroscopy
 - Isotopes Spectrometry Platform

Other institutions, organisations and networks.....

- African Laser Atomic Molecular and Optical Science Network (LAM Network), created in 1991, many conferences
- [Council for Scientific and Industrial Research](#) (CSIR) in South Africa
- African Laser Centre (ALC) in Pretoria
- African Light Source (AfLS)
- African Materials Research Society (AMRS)
- NANOAFNET NANOSciences AFrican NETwork, an initiative created in 2005 under the patronage of the ICTP, UNESCO, IAEA, TWAS and the ICS-UNID,
- UNESCO UNISA Africa Chair in Nanosciences & Nanotechnology (U2ACN2) (UNESCO, UNISA, and iThemba LABS)
- Edouard Bouchet Abdus Salam Institute(EBASI), Education
- [African Network for Solar Energy](#) ANSOLE
- Democratic Republic of Congo: Nuclear Reactor, not in use

Other institutions, organisations and networks.....

Particle physics (mainly CERN related, ATLAS, CMS, ALICE) in Algeria, Marokko, Agypt and South Africa

Astroparticle physics in Namibia (HESS)

Astrophysics & Cosmology

- African Astronomical Society (AfAS, different committees)
- African Network of Women in Astronomy (AfNWA)
- Development in Africa with Radio Astronomy (DARA)
- Africa Initiative for Planetary and Space Sciences (AFIPS)
- 5A Arising Astronomy and Astrophysics Across Africa collaborators
- IAU GA 2024 Science Committee members

ATOMIC AND MOLECULAR PHYSICS

- ASP, LAM, electronic structure communities like ASESMA, CASESMA
- Physics Department, Marien Ngouabi University (Brazzaville, Congo)
- Lasers Atoms Laboratory, Cheikh Anta Diop University (Dakar, Senegal)
- Atomic Molecular Spectroscopy and Applications Laboratory, University of Tunis El Manar (Tunisia)
- Medical University of Southern Africa (South Africa)
- African Laser Atomic Molecular and Optical Science Network

Ulrich Goerlach, Paul Guèye, Nieldane Stodart

For today

- What are the needs in these fields of physics?
- Which projects can emerge from the existing laboratories and organisations?
- How to initiate them to get active for ASFAP and writing an LOI?
- We seek advice from other ASFAP-WGs, all of you:
 - Goals of WG
 - Detector & Instrumentation needs
 - Whom to contact
 - LOIs across working groups