Post-Doctoral Fellow ATLAS TileCal and Artificial Intelligence

Contract type: Long Term Contract   Period of Contract: 3 years

Job Level: Skilled / Middle Management

Work Location: Johannesburg, Gauteng

The National Research Foundation (NRF) supports and promotes research and human capital development through funding, the provision of National Research Facilities and science outreach platforms and programmes to the broader community in all fields of science and technology, including natural sciences, engineering, social sciences and humanities.

iThemba LABS is Africa's leading research facility for accelerator-based science that is committed to advance knowledge, transform lives and inspire the nation. We do this through probing fundamental aspects of nuclear structure, investigating the origins of matter, and advancing humanity's understanding of condensed matter. In addition, we have a direct societal impact through the provision of radioisotopes for the health sector and a biophysics research program focusing on the impact of radiation on human health, as well as isotope analysis for the environmental sector.

The SA-CERN programme gives South African researchers and postgraduate students access to the largest open research facility in the world, namely the Large Hadron Collider (LHC) at CERN. South African researchers and postgraduate students participate in the SA-CERN Theory Group and in three experiments in LHC at CERN, namely: ATLAS (A Toroidal LHC Apparatus); ALICE (A Large Ion Collider Experiment); and ISOLDE (Isotope mass Separator On-Line Facility)

The current tracking system of the ATLAS Detector, the Inner Detector (ID), will be replaced during the LHC Phase II shutdown by the Inner Tracker (ITk) to improve the tracking performance and cope with the expected High Luminosity of the (HL-LHC) environment. The Tile Calorimeter (TileCal) electronics will also undergo major upgrades for the HL-LHC for the system can cope with increased radiation and provide better precision in the trigger system.

The SA-ATLAS group contributes to the Phase-II Upgrade of the ATLAS experiments (i) Inner Tracker (ITk) and (ii) Tile Calorimeter (TileCal) electronics. The successful candidates will be officially based at iThemba LABS (https://tlabs.ac.za/) within the Technology and Innovation Platform (TIP), and will work with researchers at the universities that are within the SA-CERN consortium working on the SA-ATLAS upgrade projects.

The activities at CERN include technical projects whereby South African based researchers, engineers and technicians are involved in the instrumentation projects, and activities on the upgrade of accelerator and research facilities at CERN.

Key Responsibilities:

*   Perform tasks in instrumentation and artificial intelligence according to the requirements of the Phase-II upgrade and technology transfer projects.
*   Liaise between colleagues in South Africa and CERN
*   Assist in the supervision of graduate students involved in the Phase-II upgrade and technology transfer projects
*   Participate in technology transfer activities pertaining to projects related to the Phase-II upgrade and artificial intelligence

Key Requirements:

Qualification:

PhD in Physics, Engineering or Computer Science

Experience:

* 3 years' experience in any or combination of the following: Instrumentation, readout systems, electronics, machine learning/artificial intelligence
* Significant travel required within the role

Knowledge:

* Good interpersonal and communication skills
* Good teaching and training skills
* Excellent analytical thinking skills
* Excellent problem-solving abilities
* Good hardware design skills
* Good software programming skills
* Good communication and team working skills
* Ability to work under pressure with minimum supervision
* Ability to work as an individual and as a member of a team

Information:

The website www.nrf.ac.za provides more details on the NRF initiatives and activities.

Applications:

Applicants should submit a comprehensive CV by logging to https://ess.nrf.ac.za/Account/Recruitment and apply online. Applications should be accompanied by a letter of motivation indicating the applicant's suitability for the position. The names and contact details of at least three referees should be provided.

Closing Date: 25 November 2022

The NRF offers a challenging career and competitive remuneration package which is commensurate with qualifications and experience. The NRF is committed to employment equity and redress and the appointment to the position will be made in line with the NRF Employment Equity Plan.

The NRF reserves the right not to make an appointment.

Correspondence will be sent to short-listed candidates only