Contribution ID: **25** Type: **not specified**

Opportunities and challenges of deep underground science facilities and research laboratories: An extended review of current status - (remote)

Wednesday, 21 August 2024 11:00 (30 minutes)

20-minute talk + 10-minute questions

Deep underground science facilities and research laboratories have the potential to provide a sustainable outlet for the disposal of radioactive waste. These deep underground science facilities and research laboratories can also be used to train qualified personnel. Working underground affords a highly controlled and stable environment for research and experimental purposes. Research activities undertaken in these underground facilities are protected from varying environmental conditions such as air quality and sudden and unanticipated weather changes. Perhaps more importantly, underground laboratories can be utilized in different fields of research such as physics (e.g. nuclear physics), geology (e.g. geochemistry), agriculture (e.g. food production) and biology (e.g. microbiology). Unfortunately, however, the development of deep underground science facilities and research laboratories is very costly. For example, in Africa, South Africa specifically, the development of the first underground laboratory in Africa is expected to commence sometime this year. Based on the above, this presentation will elucidate some of the benefits and novel opportunities that have come along due to the emergence of deep underground science facilities and laboratories. These benefits will be exploited from different angles such as economical gains, food sustenance and security, employment opportunities, educational development and others. However, issues of development costs for these research laboratories and the solicitation of trained personal remain big challenges to the full-scale growth of these facilities. Other challenges remain detrimental as well. This presentation will, therefore, additionally look at ways of alleviating and mitigating challenges that affect the development and use of deep underground science facilities and research laboratories, especially in third world countries and developing nations.

Presenter: GAOBOTSE, Goabaone

Session Classification: Underground Labs Science Programmes