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Session of International Outreach and Capacity Development

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We propose a session dedicated to the various efforts in outreach and capacity building in physics and related applications in developing countries. The session should cover the activities carried out by large scale international institutes and government agencies to attract and train students from developing countries, and as well to retain the students, once trained, within their geographical areas, thus increasing capacity and lessening the impact of “brain drain”.

International cooperation is a large common denominator of the culture of scientific activities. However, in many scientific disciplines and especially in our field of fundamental physics, the cooperation among developing countries and between them and northern countries is not sufficiently developed. This is especially the case for sub-Saharan Africa. We therefore want to extend the usual international scientific ties in our field to this geographical zone. With this session, it is our aim to support academic and research cooperation in fundamental physics with countries in developing countries by bringing together the scientific community participating in the workshop with the organizers of the various education and outreach efforts in developing countries.

There are well established synergies between high energy physics and other areas. For example in astrophysics, there is an overlap in several crucial science questions: theories and experiments in particle physics are part of cosmological and astrophysical models —in particular Dark Matter, Dark Energy, Dense Matter, neutrino physics, the Standard Model and beyond, exotic physics. There is a further overlap in issues of detectors and high throughput electronics technological advances at CERN, joint R&D with SKA, high performance computing (Grid, GPU, Raspberry computing), training, management and roll-out of local infrastructure. These synergies also exist for remote sensing in industry, big data computing, medicine, and many other areas. Such synergies and spin-offs are already part of many outreach programs such as the African School of fundamental physics and applications (ASP), and they can be further integrated with careful planning and partnerships. Currently, the ASP program does include lectures and discussions in astronomy, astro particle physics and cosmology. This will, in time, evolve to formally include dedicated lectures on SKA, CTA, etc. A number of ASP students have become graduate students in large multinational experiments such as ATLAS, CMS or ALICE.

For this session, we propose a few talks on the CERN and ICTP outreach programs, ASP, AIMS, and RISE as examples of capacity development programs initiated by the international scientific community in partnership with government education and research policy makers in the developing countries. The talks will be followed by a discussion on how these various programs can work together in synergy towards great positive impact.

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