

A grayscale world map showing the outlines of continents and countries, serving as a background for the text.

“Outreaching” Physics Worldwide

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Outreach Resources for All

Many places I (KS) visit are in **need of physics outreach materials** for high school students, and for teachers, teacher trainers, university professors and students looking to do outreach

Important to **listen** to what they are interested in, what topics they want to learn and what resources they need

- every country / culture is different
- our community can be Euro/Western-centric sometimes
- activities must be culturally appropriate

What **resources** do they ask for?

- Everything!!
- Booklets and posters, materials, equipment
- Software for education – online and offline, video tutorials
- Support and help

Outreach Resources for All

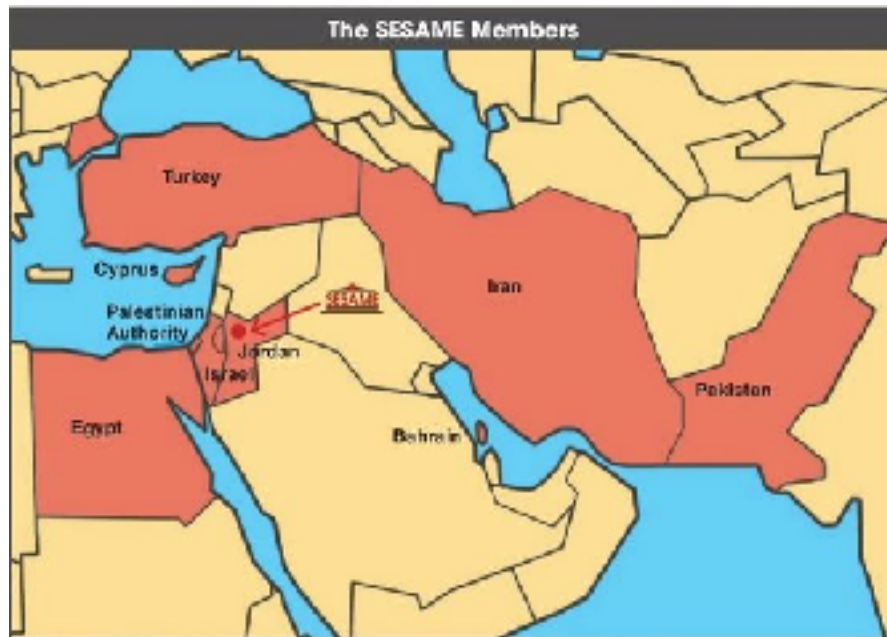
LHC and its experiments make a lot of great resources!

- I (KS) would like to see how we can share them better
- Masterclasses for example – need more tutorials and instruction

Particle physics / Fundamental research

- We need **more resources in non-LHC particle physics / physics**, especially for countries that have no connection to LHC or experts working in the country, but perhaps are involved with other particle physics experiments (cosmic rays, astronomy/astrophysics, dark matter, etc.) or maybe they have no connections!
- Would be great to provide resources and training for teachers/trainers/professors/universities students to do outreach to local high schools
- Much is available, some needs packaging up

Idea for **SESAME**: Synchrotron-light for **Experimental Science** and Applications in the **Middle East**



- **Lightsources** “are accelerators that produce exceptionally intense beams of X-rays, ultra- violet and infrared light, making possible both **basic and applied research** in fields ranging from physics to biology and technology”
- Officially opened in Amman, Jordan in **May 2017**
- SESAME will strive to **foster scientific excellence and collaboration** in the Middle East

Idea for SESAME



Excellent focus for outreach in the member nations!!

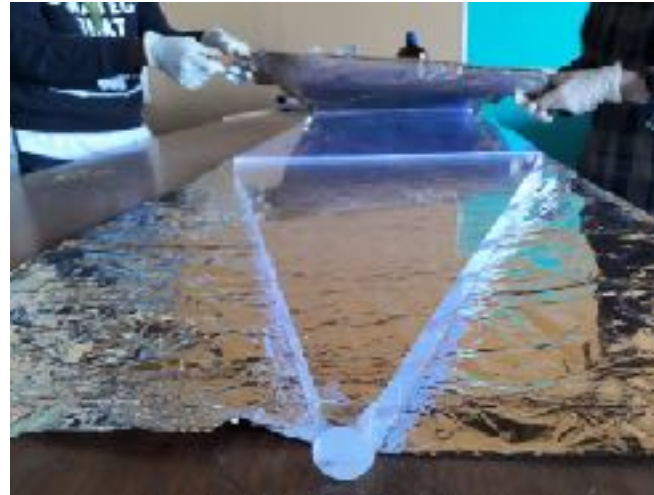
- It's local, so high school students can identify with it more easily, and feel sense of ownership, this leads to **better engagement**
- Scientists and engineers working at SESAME will be from neighbouring nations – high school students can **identify more easily** with them and **visualise themselves working there**
- SESAME beamlines do **all sorts of different science!!** From material physics to archaeology, from condensed matter physics to particle physics.. and much more!

Idea for SESAME



- **SESAME** is developing and implementing a communications plan and are also developing and have been implementing intensive training for students
- The **impact of the International masterclasses** for the LHC experiments is immense and has been a huge success!
- We believe making a **SESAME masterclass** would contribute to SESAME's ECO efforts.
- By making the masterclass available for free online for teachers and universities throughout the member countries (and worldwide), not only will this greatly contribute to high school **student and public knowledge** about SESAME but it will **aid education** for high school students in the physics of the experiments, and **build capacity** for future years
- There are over 50 light sources in the world so there is potential for **global reach** and usage (see e.g. <https://lightsources.org>)

PWF Namibia



AFRICAN SCHOOL of PHYSICS
KEN and team did amazing project
with local schools and teachers!

PWF Shipped out HiSPARC – cosmic
ray detectors for the university to
do outreach with local schools



University of Namibia
work on H.E.S.S (also
Located in Namibia)

PWF Afghanistan

Outreach program during PWF HEP Workshop at Kabul University

University and science organisations have very little resources!

We (PWF) will go again in the Spring and intend to make and take resources



Conclusions

- Important to reach out to universities, schools, and science organisations **worldwide** that lack access to resources
- Important to **listen** to what they are interested in, what topics they want to learn and what resources they need
 - every country / culture is different
 - our community can be Euro/Western-centric sometimes
 - activities must be culturally appropriate
- Tom and Kate are looking for people to collaborate with (J. Gillies is involved and is SESAME comms) to put together a proposal for a **SESAME / Lightsource Masterclass** (and where to look for funding)
- Kate is interested to work with IPPOG to see how we can 'kit' up resources and distribute them

