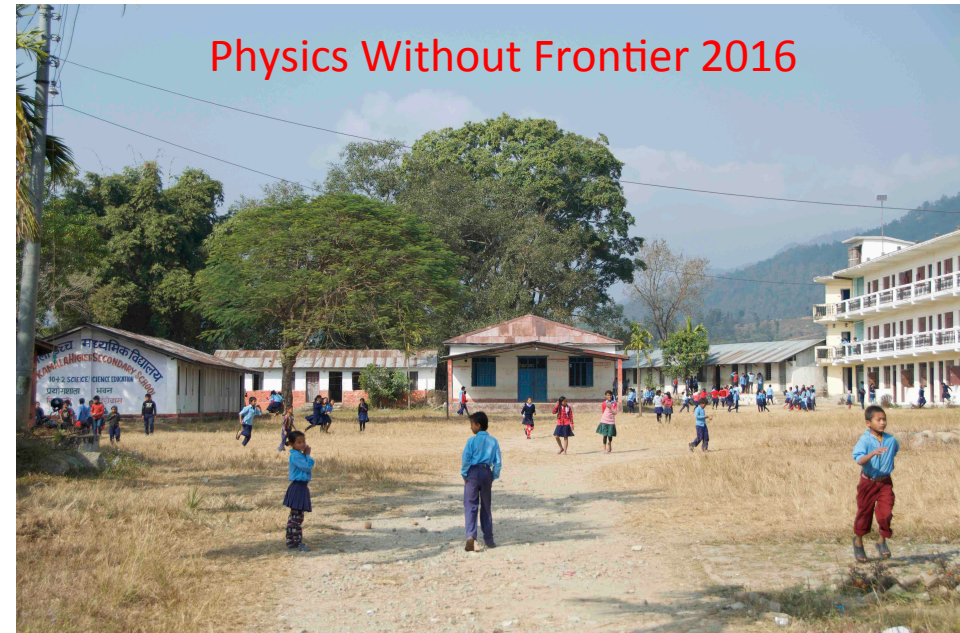


# Taking Particle Physics to Higher Altitudes: *teaching and learning experiences from Nepal*

Suyog Shrestha (ATLAS/Ohio State)

# Kamala High School (Sindhuli)

Physics Without Frontier 2016



- The school in my hometown, where I first learned the multiplication table
- Compared to what it had back then, it's now "ultra-modern"

- The town now has electricity and a highway runs through it
- The school now runs science classes all the way up to B.Sc. with affiliation to Tribhuvan University – the oldest and largest in the country
- Infrastructure is still a bit ... primitive?



# Kamala High School (Sindhuli)

- The reason we went to this school was the science teacher (and principal) of the school – Mr. Kamlesh Chaudhary
- He came to CERN for Science Teacher Training Program in 2015, returned to Nepal and invited us to do a program there



- Some 120 students and 30 teachers/staff/townfolk
- Students were highly enthusiastic and asked brilliant questions
- We had a lot of fun interacting with the students and the management there!
- **But Kamlesh isn't the only teacher from Nepal who has attended the Science Teacher Training Program**

# Adarsha School (Syangja)



- From ~200 KM southwest of Kathmandu, another high school science teacher, Mr. Bishnu Lamsal, attended the CERN Science Teacher Training in 2014



- We went there in December 2014 and had a wonderful outreach session
- The students were again very enthusiastic and quite brilliant!

(Small voice in me: Students in Nepal tend to be enthusiastic and brilliant in general! ©)



- In addition to the two high school teachers, students have also found opportunities through the outreach programs
- One student from the PWF 2014 (Santosh Parajuli) came to CERN Summer Program in 2015 and another student (Yadav Kandel) went to ICTP for Summer 2015 (and briefly came for CERN tour)

- In 2016, yet another student (Mahesh Thakuri) came to CERN Summer Program
- Currently, they are all finishing their M.Sc. Theses at Tribhuvan University
  - Santosh, supported by ICTP, is doing his thesis on a Higgs analysis on ATLAS!



Date:  
8th Jan, 2016

Speakers

Organizers

Venue  
Seminar hall  
Central Department of Physics  
Tribhuvan University, Kirtipur



Dr. Joerg Stelzer  
(CERN)



Dr. Kate Shaw  
(ICTP)



Dr. Suyog Shrestha  
(Ohio State University)

Central Department of Physics  
Tribhuvan University



ICTP  
The Abdus Salam  
International Centre  
for Theoretical Physics



- 2013 - pilot project at Kathmandu University (KU)
- 2014 - Masterclass at KU with students from other universities, and later video connection to India
  - For “technical” reasons couldn’t connect with Pakistan
- 2015 - Masterclass at KU with students from other universities

# The Public



- We were lucky, to be honest, that by the time we started, many people knew about CERN and its mission
- Our reaching out to public included
  - A few articles in the magazines/newspapers
  - A short episode on particle physics and CERN programs on national television
  - Screening of Particle Fever was a HUGE hit with a waiting list of 250 people!

# Reaching out to Government

- With help of the Mission in Geneva, have established contacts in the government
- The govt is interested in strengthening ties with CERN and the cabinet is currently reviewing the Int'l Cooperation Agreement with CERN

Minister of Health Visits CERN  
with the Ambassador in Geneva



Ministry of Science organizes a virtual  
visit to ATLAS on National Science Day



Visitors from the Mission in Geneva





# Did anything work?

- Perhaps too early to tell, but I think something might have worked
- Great team, for example!
  - Abha, Joerg, and Kate did a lot of hard work and I put on my best act as a local physicist
  - Support from CERN, ATLAS Outreach, ICTP
- Government Contact in Geneva
  - Mission in Geneva helped get in contact with the Ministries
- Local points of contact
  - Local contacts through Abha helped all the events and news coverage possible
  - Physics Chair at KU in the 1<sup>st</sup> year (2013) helped make the 2<sup>nd</sup> year program a huge success
  - In 3<sup>rd</sup> year, students from previous PWF program took lead
  - Lot of local volunteers

# Why am I doing this?

- Personal prejudice – Because it is fun! 😊 I enjoy doing it, I assume so will everyone else.
- Practically speaking, because there is a lot of interest among the young in Nepal
  - Don't ask me why.
  - I have several theories but none is falsifiable.
- Optimistically, someday this will lead to a highly skilled manpower which will contribute to the development of the country and the region

# Challenges

- People are very welcoming of science and scientists in general
  - they have seen “miracles | of science in developed countries
  - the challenge would be to meet everyone’s request
- Travel within the country can be an adventure
- Infrastructure in Academic Institutes – except for the best universities and colleges – is poor
  - No big enough room to hold people
  - Internet connection, if it exists, is poor
  - Take papers, pre-downloaded videos, portable projectors etc.
- Bureaucracy
  - Challenging in the first year, and then can become entertaining!
- From the pool of participants in our programs, I suspect a future challenge will be to retain them in the country

# Get Involved

- Opportunities for video seminars
- Come to trek in Nepal, and stop by a school, give a seminar

