

Masterclasses Communication

**Some general guidelines based on
experience from previous Masterclasses**

Basic Communication Issues

● There are (mostly) two moderators running the show

→ both moderators should talk roughly to equal amounts

- in case of a (more) senior + (more) young moderator, the senior one should not answer all questions...

→ avoid talking too much to your co-moderator

- a long dialog only between the moderators may disconnect the students
- if you feel you've talked too much, hand over to your co-moderator, e.g. “Kate, this seems a perfect question to be answered by you...”

● Most of the students aren't native English speakers and don't understand and speak English very well

→ speak slowly and clear

→ avoid using complicated and long sentences

→ use simple words (vocabulary of the students is limited)

→ don't use acronyms, abbreviations, physics slang not common outside of our community, avoid talking “CERNish”

Starting the Conference I

● Introduce yourself

→ e.g. “My name is Michael, I'm working at ..., one of the 4 large experiments at the LHC collider at CERN in Geneva Switzerland...”

● Explain where we are (the moderators)

→ e.g. “Right now we are sitting at CERN. CERN is the largest centre for particle physics research in the world and a rather cool place...”

● Tell in a few words, what's happening in the next hour

→ read the agenda, e.g. report of measurements and discussion of the results, questions to the moderators, quiz

● Display a map showing all connecting sites

→ an actual map of today's VC is available, produced by the Masterclasses organizers before the VC:

<https://twiki.cern.ch/twiki/bin/view/Main/InternationalMasterclassesModeratorManual>

Starting the Conference II

- **Ask one short question to each masterclass, one by one**
 - answer should be given by a student (not the organizers or teachers), no longer than 2 minutes.
 - question could be a localized question, that you might receive from the local organizers beforehand, e.g. “Vienna, have you seen the VERA accelerator?”

General Comments on Discussion

- **Most difficult part: to encourage the students asking questions at all**
 - they are shy, don't want to expose themselves in front of their fellow students
 - it's a video conference with microphone + camera, they are not used to
 - they don't speak English well, sometimes cannot express what they want to ask, don't know the right words (e.g. in physics questions)
- **For them, we (at CERN) are considered as “super-experts”**
 - they are even more shy and hesitate to ask “stupid” questions
- **Try to encourage them**
 - go through institute by institute and ask if the students have questions
 - give examples: “was the exercise difficult, what was the largest problem, how is life at CERN” etc.
 - sometimes teachers (very rarely) or local physicists are asking the questions on behalf of the students

(Most) Frequently Asked Questions I

(and quick answers)

→ for detailed answers see: [Moderators Manual](#)

How can I come to work at CERN?

- Internships (2 weeks), Summer Students (2-3 months)

What's the salary of PhD students / CERN staff etc.?

- don't give precise answer here, we don't get rich but have fun...

What's the cost of the LHC?

- LHC machine: 5 BCHF (4 B€) + experiments: 1.5 BCHF (1.25 B€)

What's the power consumption of the LHC?

- CERN total (with pre-accelerators etc.): 180 MW (180'000 households)

How much Helium is needed to cool the LHC magnets and what's their temperature?

- 120 tons, 1.9 K = - 273.3 °C (universe: 2.7 K, microwave background radiation)

(Most) Frequently Asked Questions II

(and quick answers)

- **What's the speed of protons in the LHC? Are they travelling with light speed?**
 - 99.9999991% (at 7 TeV/beam) = just 2.7 m/s slower than light
- **Will Peter Higgs / CERN / the LHC experiments get the Nobel Prize?**
 - Nobel Prize can go to a maximum of 3 people for their individual work, no institutions, no representatives of institutions (e.g. DG, Spokespersons)
 - likely that Peter Higgs + 2 others will get it (2013?), but not CERN, LHC experiments etc.
- **Can the LHC create black holes that destroy the earth?**
 - **NO!**
 - cosmic rays are hitting the earth since >4 B years, energies in collisions are up to 1000x higher than at LHC, earth does still exist...
- **More facts**
 - <http://public.web.cern.ch/public/en/lhc/Facts-en.html>
 - <http://cdsweb.cern.ch/record/1165534/files/CERN-Brochure-2009-003-Eng.pdf>