



# International Masterclasses

## Recommendations for

# Online Masterclasses

## Introductory Remarks

International Masterclasses is a worldwide program, running in 60 countries on all continents. The 2021 edition of the program will be severely affected by the COVID-19 pandemic. We expect that many Masterclasses cannot be held onsite at the universities and research labs, especially if visitors will not be allowed on campus. In that case, physicists might visit classrooms to deliver the Masterclass there.

Remote Masterclasses are a proven alternative, either with high school students at home or with students in their schools. This document contains a collection of recommendations for such remote Masterclasses.

## Lectures

- Use Zoom videoservice
  - Webinar style for large groups
  - Protect against Zoom-bombing
- Provide preparatory material for students, e.g. videos, online courses
  - Some of these will be collected or created and made available
- Start the day with a short community-building game or a round of introductions
- Include many interactive parts, e.g. Zoom polls, kahoot quizzes
- Include enough breaks
- Consider splitting the whole Masterclass content over 2 or more days

## Hands-on Measurement

- Create break-out rooms for pairs of students
  - difficult to manage for large groups
  - additional tutors may be needed to manage
  - if available, teachers who are proficient with masterclasses can help
- Distribute download links beforehand
- Point students and teachers to screencasts for ATLAS Z, CMS, and MINERvA Masterclasses at <http://tiny.cc/imc-vid> (how to install the software etc.).
- Ensure that students have the software ready
- Switch to online tools where practical
- Use simplified measurements, especially where there is less support

## Videoconference

We expect to have a mix of groups and individual students in each of the sessions. Also, moderators might not be able to sit together. This could lead to the need to adjust the videoconferencing structure. For example, if many students connect individually from their home, the Zoom webinar style might be chosen.