



Remote Masterclasses in Poland

May 19, 2019

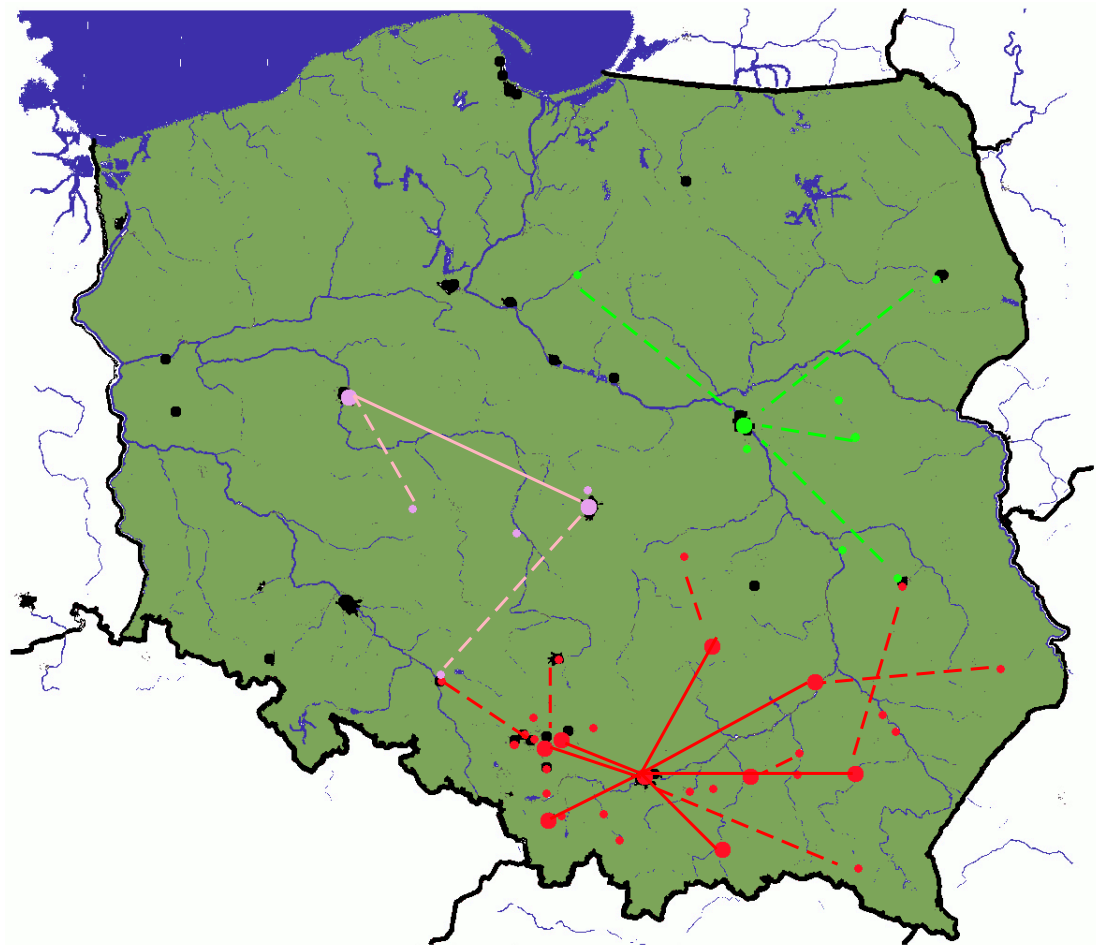
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Poland

Standard Masterclasses (up to 2020)

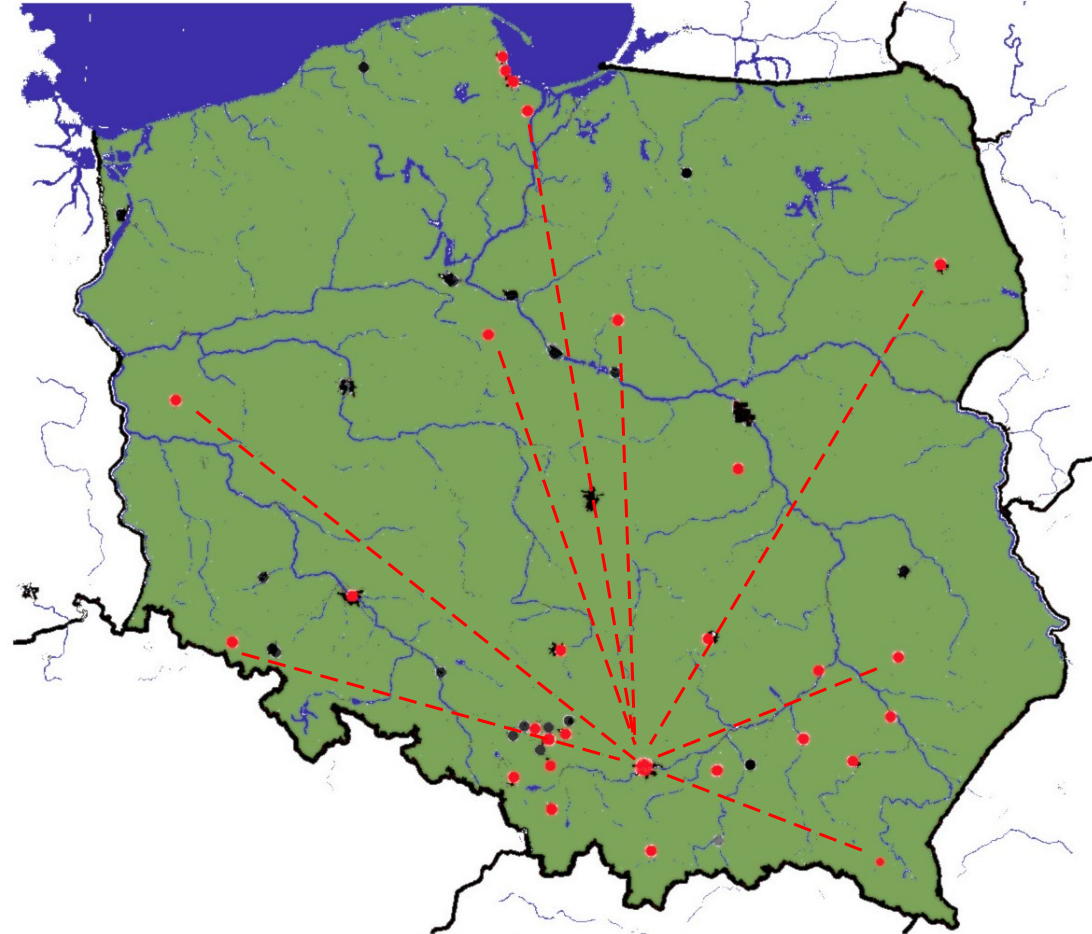
- in fixed places at universities (Warszawa, Łódź, Poznań, Katowice, AGH Kraków)
- at schools (IFJ Kraków), in different cities (so far 8)
- number of participants limited by the capacity of the room for lectures
- students coming from nearby cities
- tutors: physicists + experienced students (when available)

Students from nearby cities, because of travel time and costs



Remote Masterclasses in 2021

- two events organized in Warszawa (on Saturdays in November 2020 and May 2021) - low attendance of students
- event for ~30 university (first year) students (organized by AGH Kraków)
- three events (February-March 2021) organized by IFJ Kraków
 - about 200 students at each
 - over 40 high schools registered
 - 11 tutors, helping students at ~2 events (groups 17-37 students) in separate ZOOM rooms
 - help from experienced students or selected by teachers - special training before Mastwerclasses event



Preparation

- a few days earlier students obtained links to the HYPATIA software, <http://atlas.physicsmasterclasses.org> page, measurement instruction in Polish and the number of the dataset to examine
- teachers registering larger groups of students were asked to select a few, who could help their colleagues in the measurement
- the selected students (experts) attended a special ~1h training before the event
- all students were asked to download the software before the event and test if it is working - experts were supposed to help with the software

ZOOM meetings

- in order to prevent ZOOM bombing, each student should connect with a unique name, known to the teacher
- teachers were also encouraged to attend
- waiting room used, but ...
- finally all students were allowed to enter, even those using other names
- during measurements up to 10 different rooms with a tutor were used
- no problem with any abuse during lectures or measurements, but unique names weren't used so much during videoconference with CERN
- students were encouraged to communicate between themselves using other methods - a substitute to making measurement in pairs

Lectures

- the person giving a talk was supported by a second one, checking the waiting room and the chat
- after each lecture additional questions written by students in chat window were answered
- the Q&A after last lecture was extending sometimes through whole lunch break (~1 hour)

Measurement

- tutors were connected to ~10 ZOOM rooms
- some students did finish the measurement in the lunch break
- problems were only sometimes reported, it was necessary to actively ask students about their work
- large differences between groups, some were very difficult to motivate to say anything

Outcome

- the examination of the database with stored results showed, that about 50% of registered students have downloaded their results
- there was large variance in "efficiency", calculated for groups larger than 10, from 10% to over 90%
- for schools which registered only 1-4 students, "efficiency" was over 90%
- probably there were some cases of technical problems, but ...
- some students were hesitant to upload partial results or were not sure their results are correct, however ...
- obviously, when whole class was registered, quite frequently large fraction of students wasn't really interested, and without a direct supervision did not perform the measurement

Remote Masterclasses

- + much larger geographical reach
- + lower barrier for asking questions
- + easier to find tutors (2h vs one day)
- no direct face-to-face contacts
- lower "efficiency" of measurements

good opportunity to find students really interested in physics, who have no chance to attend standard Masterclasses

