

Student's point of view

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Physics study programs in Slovakia:

Bachelor degree (3 years).

- Basic courses from maths, mechanics, electromagnetism, optics, quantum theory, nuclear physics, thermodynamics ...
- Each department provides some elective basic courses related to its field of research.
- There are also series of "popular" lectures from researches working on the faculty. Important for students in order to choose their topic for bachelor thesis.
- During 3rd year of study, student works on his thesis.

Master degree (2 years).

- Specialized to theoretical physics or nuclear and subnuclear physics.
- Student works on his diploma thesis basically all the time.

PhD study in Slovakia:

Requirements for obtaining the PhD:

- At least 240 credits:
 - 40-80 credits from study part (lectures)
 - 50 credits for the thesis defense
 - 110-150 for research related and other activities
- At least one publication with significant contribution of student together with other publications (where the student does not have to be main author).
- In the second year of study, there is a mandatory exam focused on student's field of study together with defense of "Project of PhD thesis", which is basically the first (mostly theoretical) part of student's PhD thesis.
- PhD thesis defense at the end of the PhD study.
- In general, teaching is not mandatory (depends on the department).

PhD study in Slovakia:

- Recommended duration is 4 years ... but it often takes longer.
- In average, student spends one year abroad at CERN or other international institutes.
- Cooperation with abroad research teams and possibility of joined PhD study.
- Student receives scholarship in amount of $\approx 60\%$ of average salary in Slovakia and after Project of PhD thesis defense it is $\approx 70\%$.

Comenius University, Faculty of mathematics, physics and informatics:

Department of Nuclear Physics and Biophysics:

- Offers one HEP related master's degree program: "Nuclear and Subnuclear Physics" (2 years), which includes courses of detector physics, radiation physics, nuclear physics and high energy physics.
- Offers one HEP related doctoral degree program: "Nuclear and Subnuclear Physics" (4 years)
- Involved in three experiments: ATLAS (7 PhD students), ALICE (1 PhD student) and ISOLDE

Comenius University, Faculty of mathematics, physics and informatics:

Department of Theoretical Physics and Physics Education:

- Offers one HEP related master's degree program:
"Theoretical Physics" (2 years)
- Offers one HEP related doctoral degree program:
"Theoretical and Mathematical Physics" (4 years)
- Involved in experiment NA62 (4 PhD students)

Funding:

- Student's income is based on the scholarship from sources of Ministry of education, science and sport.
- Possibility to apply for grants.
- Majority of grants are not high enough to cover stay at CERN for more than few days and it's not possible to use them to buy an equipment.
- To get grants covering travel to conference, long-term stays at abroad institutes, joined PhD ... is quite difficult.
- Once per few years, there is a grant scheme for PhD. students and young postdocs.

The last grant scheme (11.2015-3.2016):

- In average 10.000 euros per student. 20 % of the amount could be used to buy literature, laptops e.t.c.
- Most of the students used it to cover \approx 2 months stay at CERN, attendance to conference, getting equipment ...

Research:

ATLAS group in Bratislava:

Top-quark physics:

- Top-quark width measurement.
- Charge asymmetry in $t\bar{t}$ production.
- Measurement of $t\bar{t}Z$ cross-section.

Standard model measurements:

- Bose-Einstein correlations.
- Intrinsic charm of the proton

ALICE group in Bratislava:

- Detector physics: TPC upgrade (measurement of the ion mobility)
- Data analysis from pp and $Pb-Pb$ collisions: Study of strange particles.

NA62 group in Bratislava:

- Rare kaon decays

Cooperation:

ATLAS group:

- Once a year there is a meeting of people from Czech and Slovak Republic which are working on ATLAS detector.
- Each PhD. student has a presentation about his topic (≈ 20 presentations).
- Czech and Slovak languages are very close, so we understand each other even without English.
- Right now there are few students with joined PhD on universities in Geneva and Goettingen

Outreach:

- Night of science - some "toy experiments" like home-made cloud chamber, Rutheford experiment, models of LHC experiments, discussions with visitors.
- Masterclasses - multiple talks given by PhD. students.
- Popular lectures at high schools given by PhD. students (visiting high schools where we studied)