

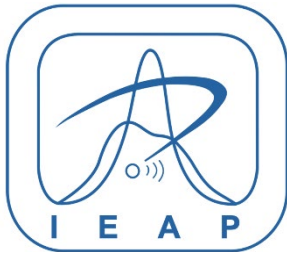


IEAP, CTU in Prague | Prague, Czechia

Adwait

Dept. Of Physics – Master of Particle Physics (IMAPP) – 4th Semester

01.03.2025 – 01.09.2025



IEAP, CTU in Prague

IEAP is a research institute within CTU founded in 2002, focused on experimental particle and nuclear physics as well as applied physics.

It works on detector- and instrumentation-development: e.g. semiconductor pixel and strip detectors, spectrometric and imaging systems including high-resolution 2D/3D imaging. They are involved in large international collaborations: ATLAS at CERN, underground neutrino and dark-matter experiments, and support development of low-background detection technologies.

IEAP also links research to applications—medical imaging, material science, space instrumentation—and offers advanced education programmes for graduate students.

Stadt, Land

Prague, the capital of the Czech Republic, is a historic city located in the heart of Central Europe on the Vltava River. Known as the “City of a Hundred Spires,” it is famous for its well-preserved medieval architecture, including Prague Castle, Charles Bridge, and the Old Town Square with its Astronomical Clock. Geographically, Prague lies in the northwestern part of the country, nestled within the Bohemian Basin and surrounded by low hills, making it a natural crossroads of European trade and culture. Its central location has long made it a hub of politics, education, science, and the arts in the region.





Vorbereitung

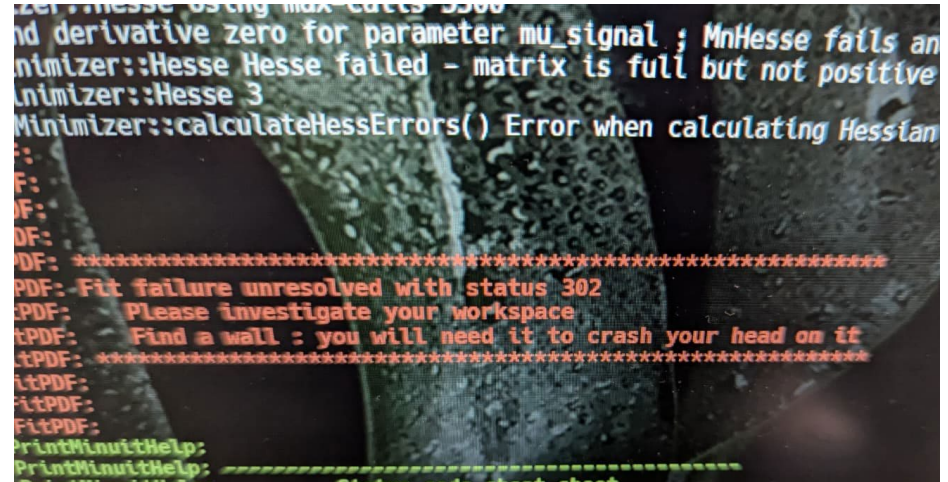
The accomodation was provided by the institute. It is not easy to find such cheap housing in the city centre. The rent was close to 350EUR, but it could be even cheaper, if there is official student status from CTU.

By sending an email to the potential supervisor, requesting for a master thesis supervision

Aufgaben während des Praktikums

I handled a full chain analysis of a BSM search in particle physics using ATLAS resources. Starting from simulation of a potential signal to preparing datasets and comparing simulations to recorded ATLAS data as well as finally setting statistical limits on the sensitivity of the analysis towards a potential signal.

My job was to bridge the gap between particle physics theoretical knowledge and practical usage of coding skills to design ML and statistical analysis methodology



```
zer: Minuit2 using max cuts 3500
nd derivative zero for parameter mu_signal ; MnHesse fails an
imizer::Hesse Hesse failed - matrix is full but not positive
imizer::Hesse 3
Minimizer::calculateHessErrors() Error when calculating Hessian
F:
DF:
DF:
PDF: *****
PDF: Fit failure unresolved with status 302
PDF: Please investigate your workspace
tPDF: Find a wall : you will need it to crash your head on it
tPDF: *****
tPDF:
FitPDF:
FitPDF:
PrintMinuitHelp:
PrintMinuitHelp: =====
PrintMinuitHelp: Status code sheet sheet
```

- Python
- C++
- ATLAS Athena
- FastFrames
- TRExFitter
- Applied statistics
- Presentation skills + Collaborative spirit



Eindrücke

I was able to meet people from parts of the world that I hadn't been familiar with earlier. Mostly from Central and Eastern Europe as well as many Central Asian people. Their culture and languages are vastly different from what I have seen in Western Europe



Kultur

The Czech culture around Easter is a bit shocking, but interesting once I talked to a Czech person in-depth to better understand the history and culture.



Nothing in particular that is vastly different from Germany

Nachhaltigkeit

Hin- und Rückreise

Yes, Prague is well-connected with trains and buses to other European cities. My travel to and from Prague was by bus. When I was leaving Prague, the ride on the bus was especially rewarding because I crossed 3 country borders and the changes you see along the way is not something that can be seen from a plane.

Nachhaltigkeit vor Ort

Tipps & Vorschläge für zukünftige Praktikant/-innen

- Get in touch with the ESN at Dejvice as soon as you reach
- The transportation passes also allow discounts on rentable bikes (RideMovi)



Das Leben danach...

I am definitely going to pursue a PhD in particle physics after this. The work that I did here was largely independent and so I was able to get a lot done. I was also able to present my work at a conference in Slovakia



Anything else?

They don't really sort their garbage as strictly here.

