Michael Reichmann

Self Presentation

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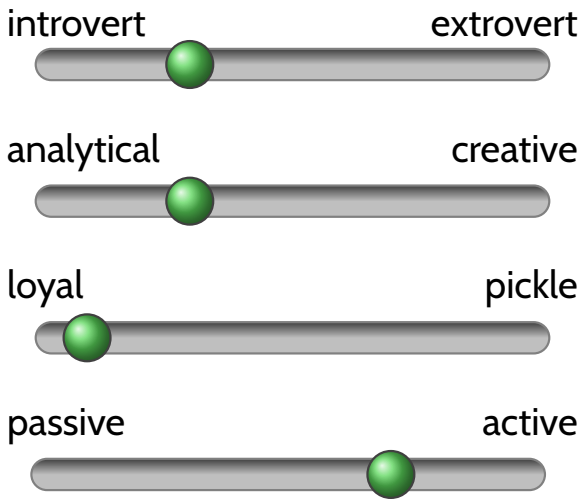
Biography

Michael Reichmann

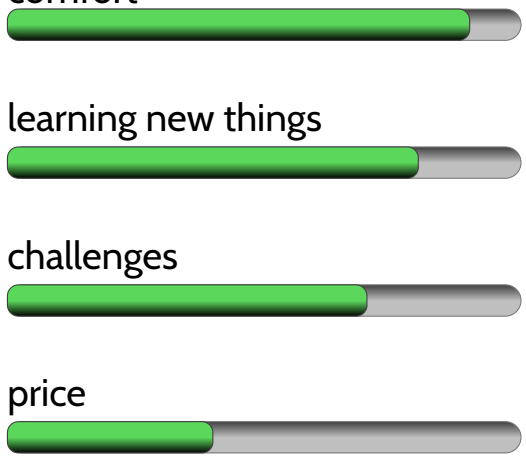
"Ultimately real is only the present moment of physical efficiency."

Age	34
Education	Dr sc.
Location	Wroclaw, PL
Archetype	The Explorer

Personality



Motivations



Education

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School

Abitur
Dr.-Sulzberger-Gymnasium
Bad Salzungen

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Graduation

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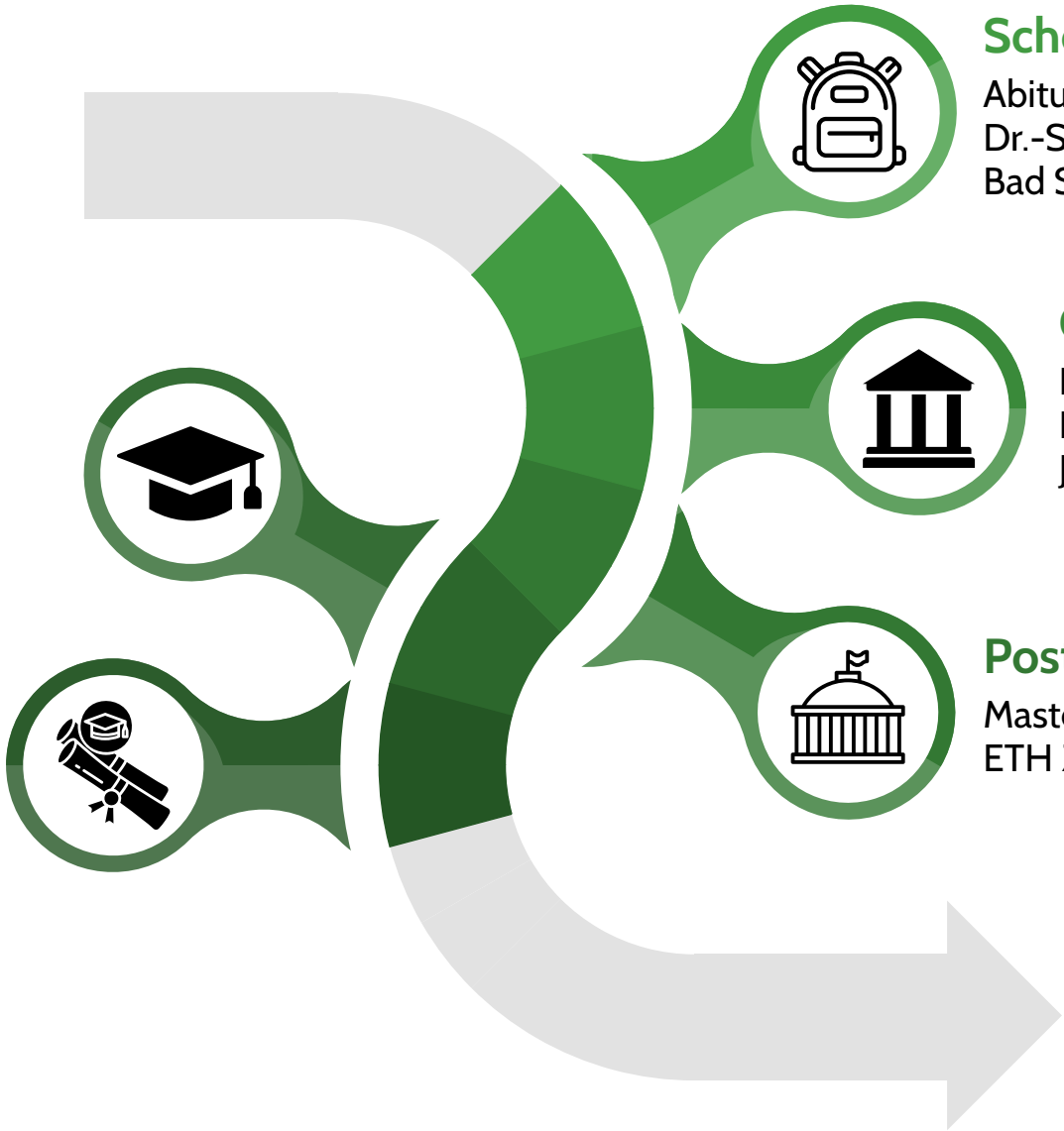

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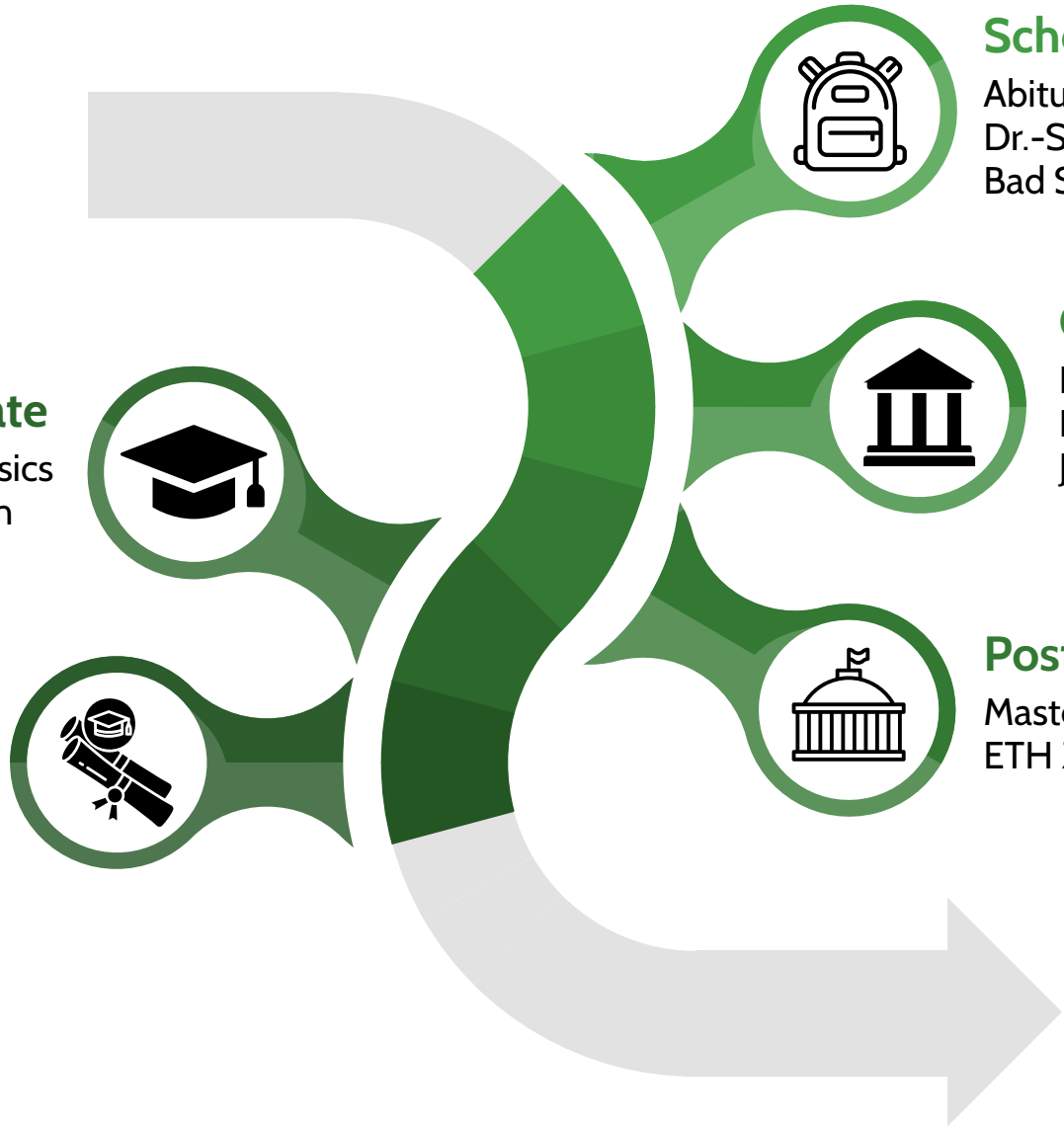

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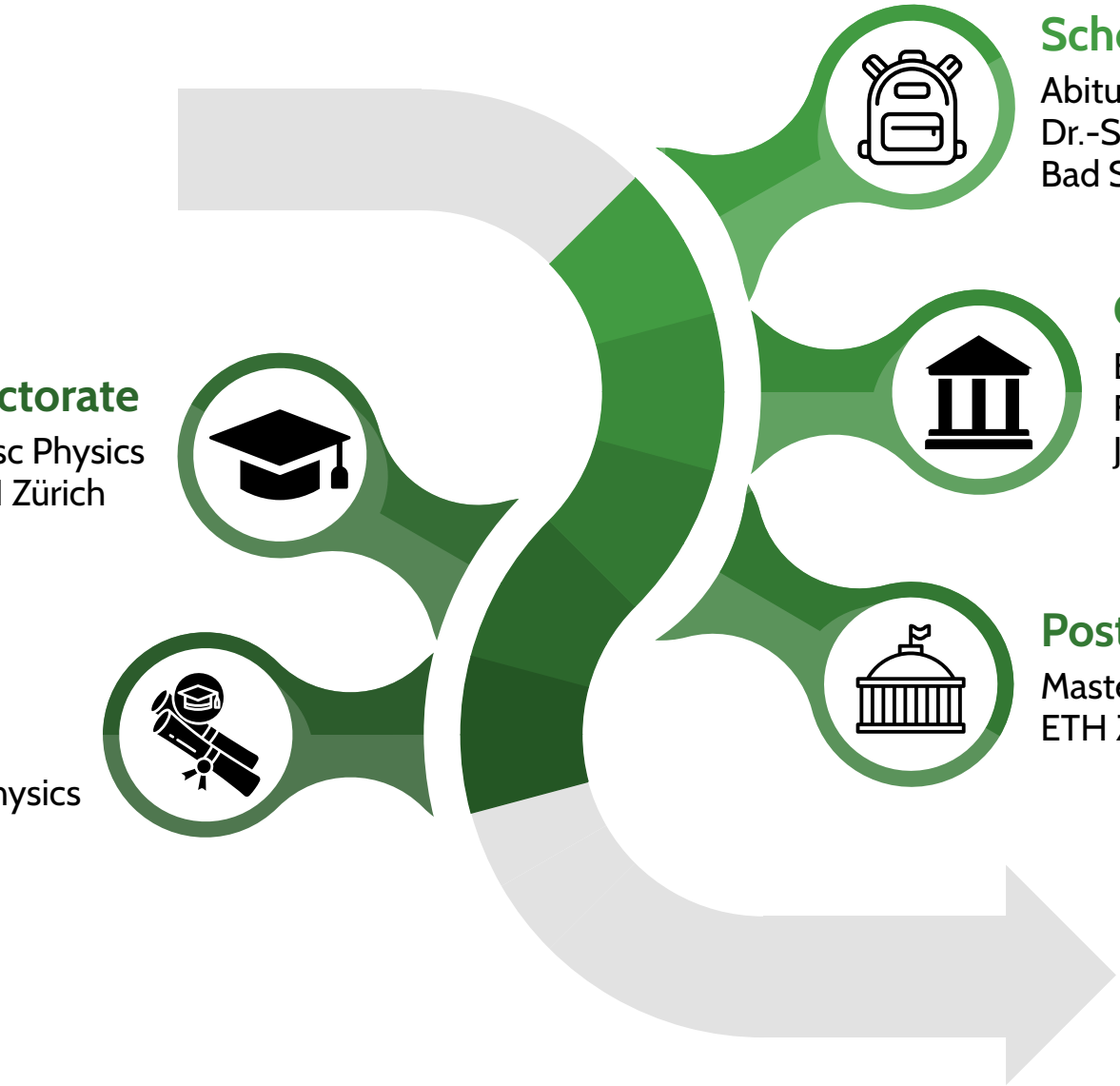

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ETH Zürich

Diploma

Doctor of Science
Particle Detector Physics

Key Skills & Expertise

Languages

German — native

English — C2

Russian — B2

Polish — B1

French — B1

Spanish — A1

Skills

Strenghts

- analytical thinking
- team work
- fast learning
- structured

Weaknesses

- perfectionism
- boredom

Personal Life & Hobbies

Cycling

Family

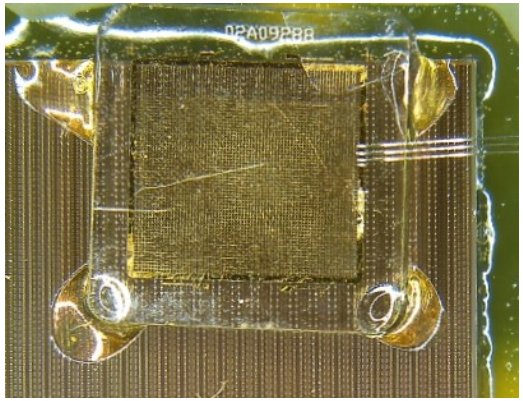
Travel

Work Experience

Customer Support

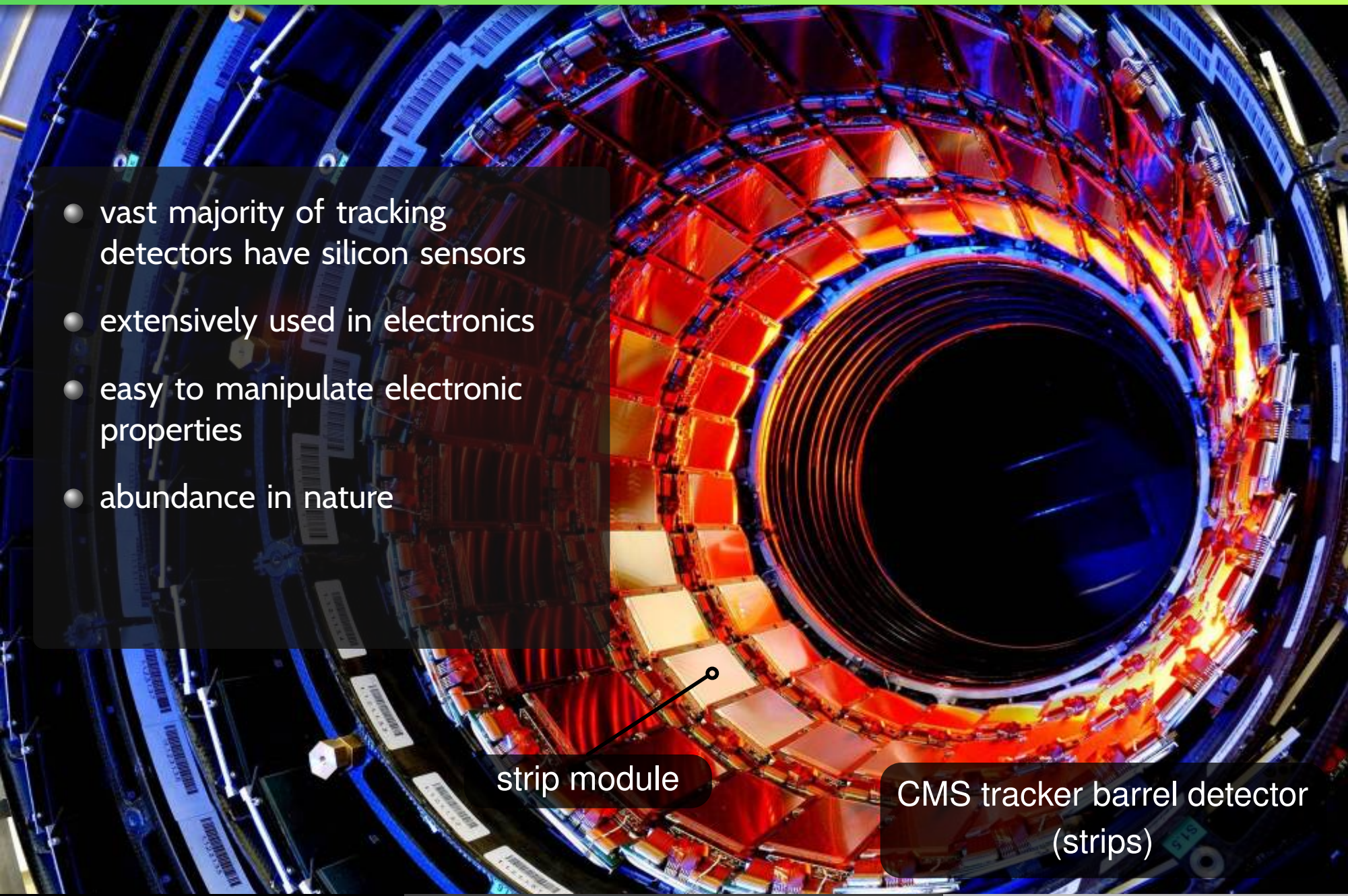
- in-game support an MMORPG
- working with both German & English
- customers ask everything
- very good understanding required

Doctorate



- studying a particle detector
- setting up experiment and data-acquisition
- leading small group
- developing data analysis software

Silicon → diamond

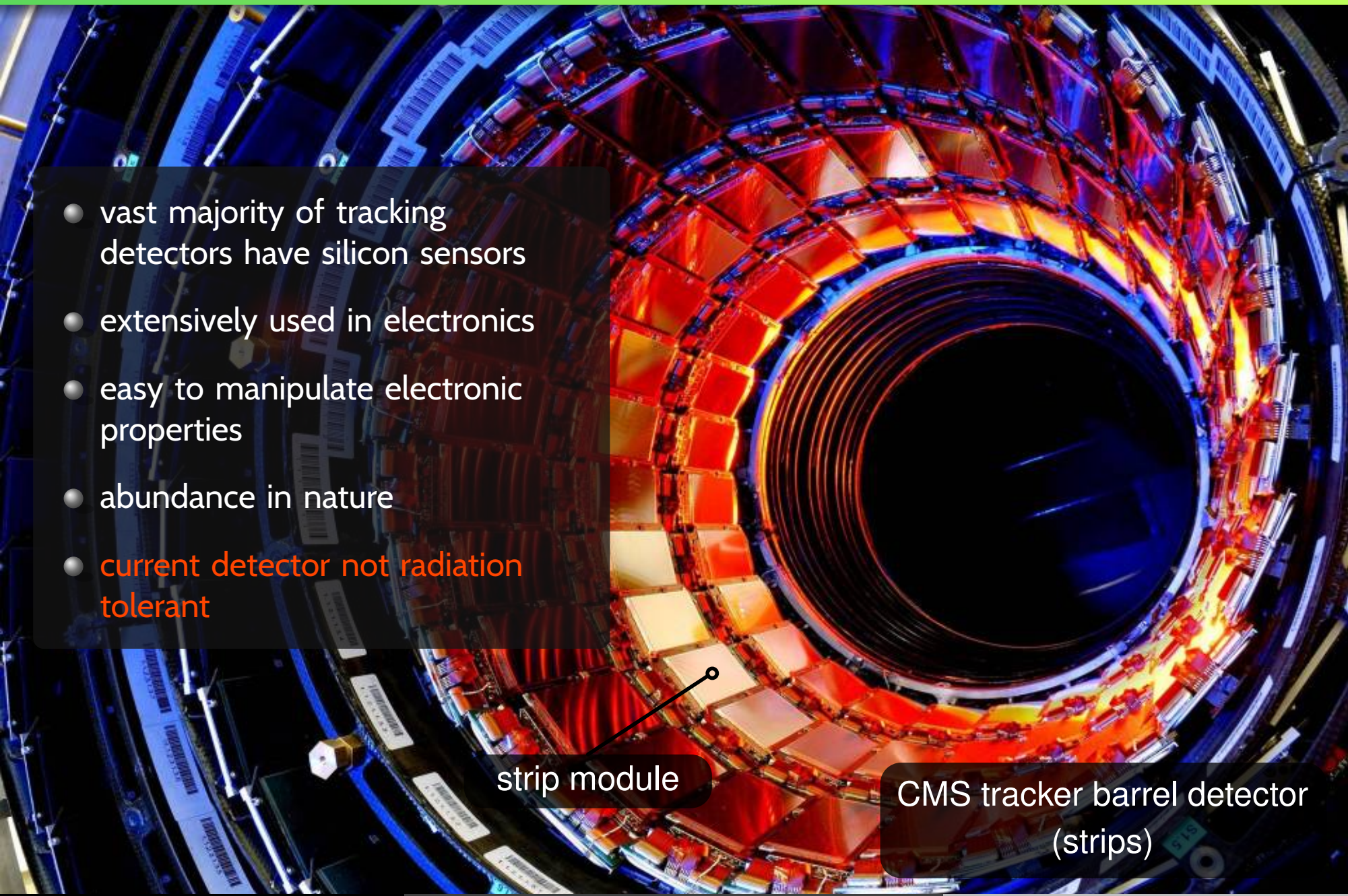


- vast majority of tracking detectors have silicon sensors
- extensively used in electronics
- easy to manipulate electronic properties
- abundance in nature

strip module

CMS tracker barrel detector (strips)

Silicon → diamond

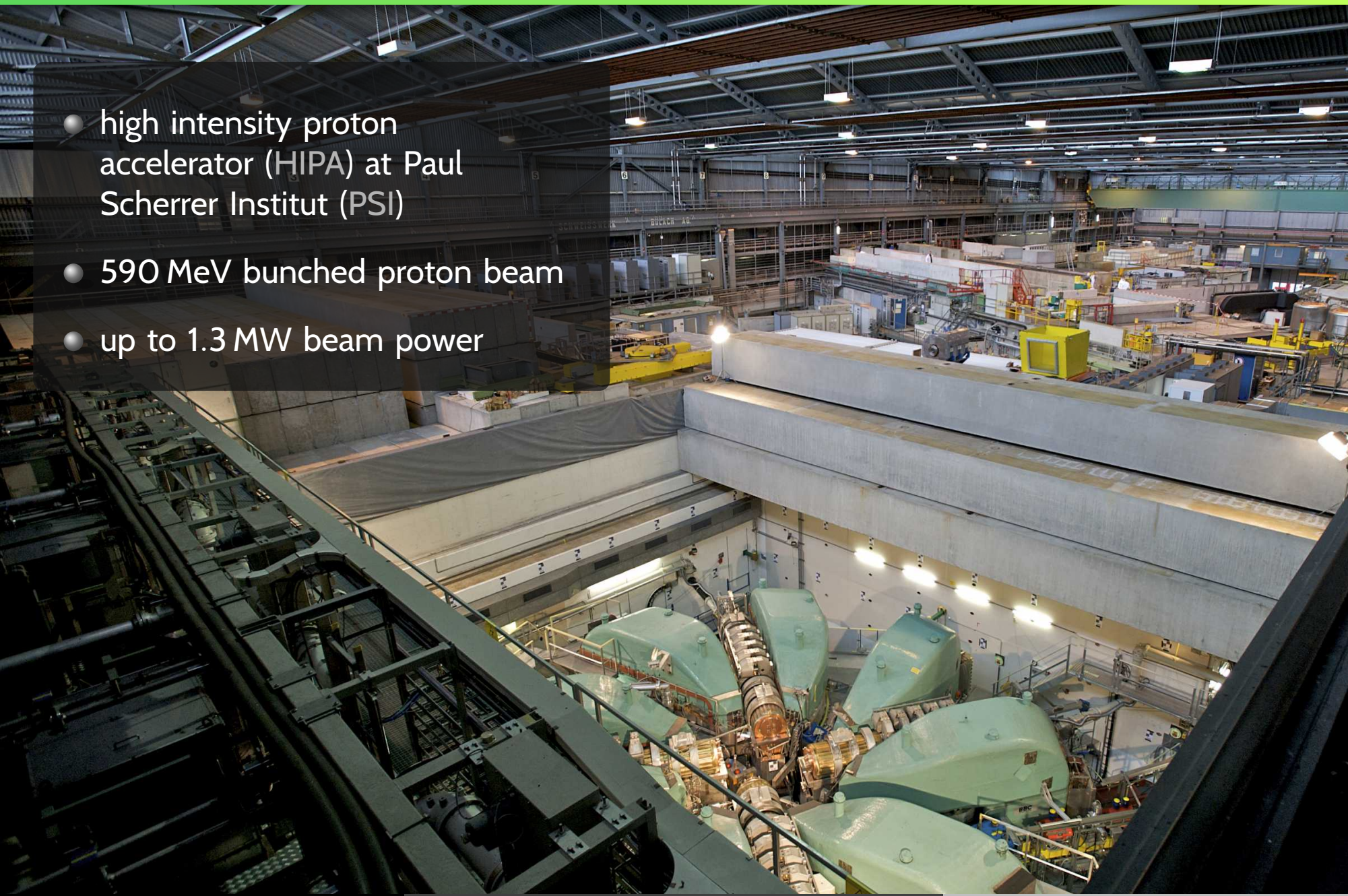


- vast majority of tracking detectors have silicon sensors
- extensively used in electronics
- easy to manipulate electronic properties
- abundance in nature
- current detector not radiation tolerant

strip module

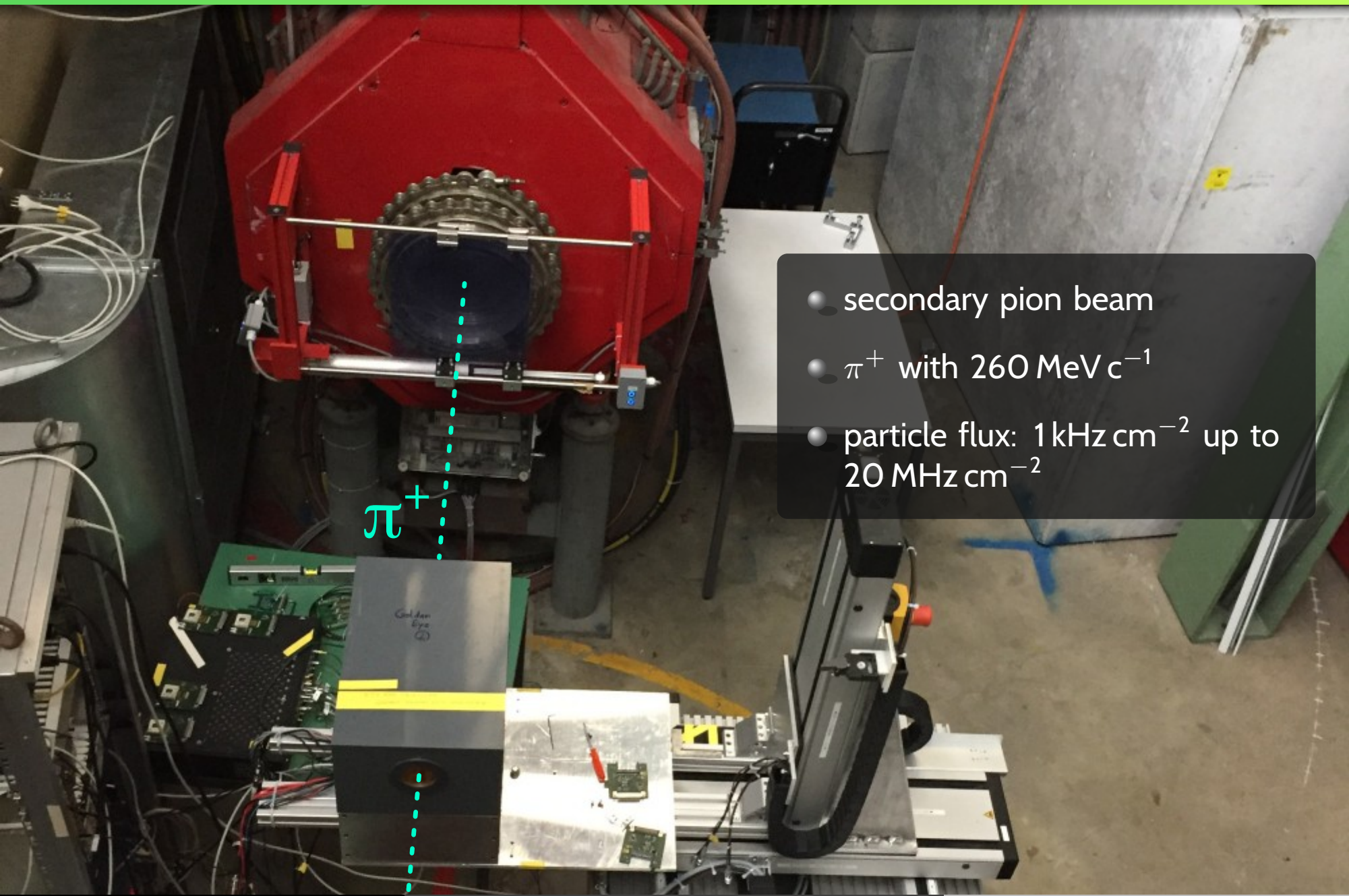
CMS tracker barrel detector (strips)

Test site



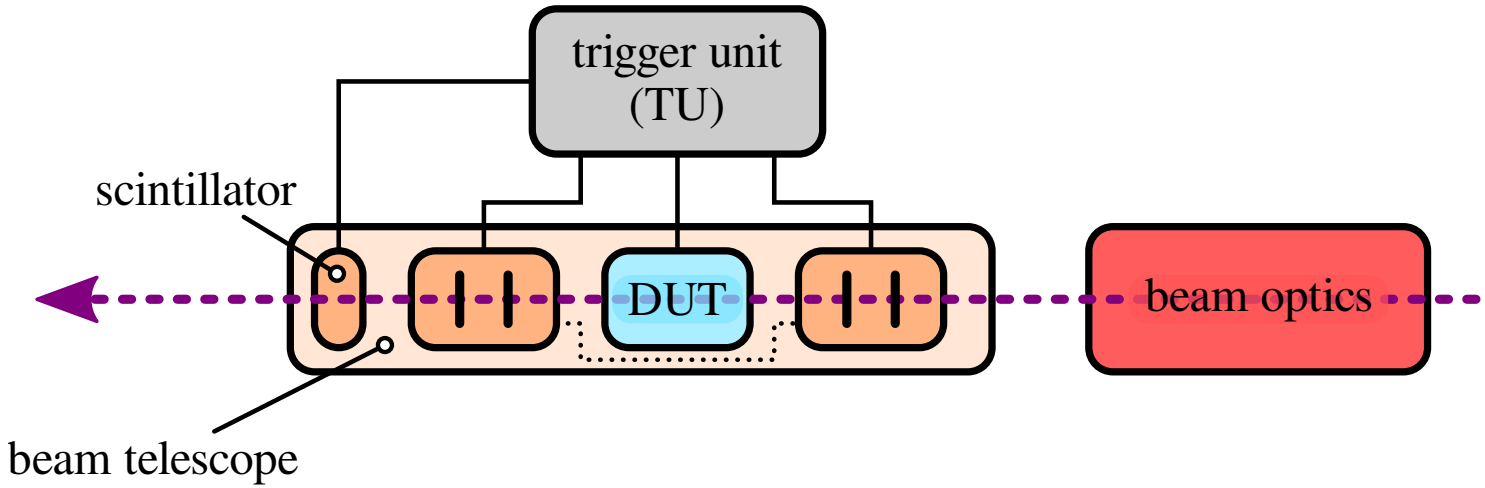
- high intensity proton accelerator (HIPA) at Paul Scherrer Institut (PSI)
- 590 MeV bunched proton beam
- up to 1.3 MW beam power

πM1 beam line



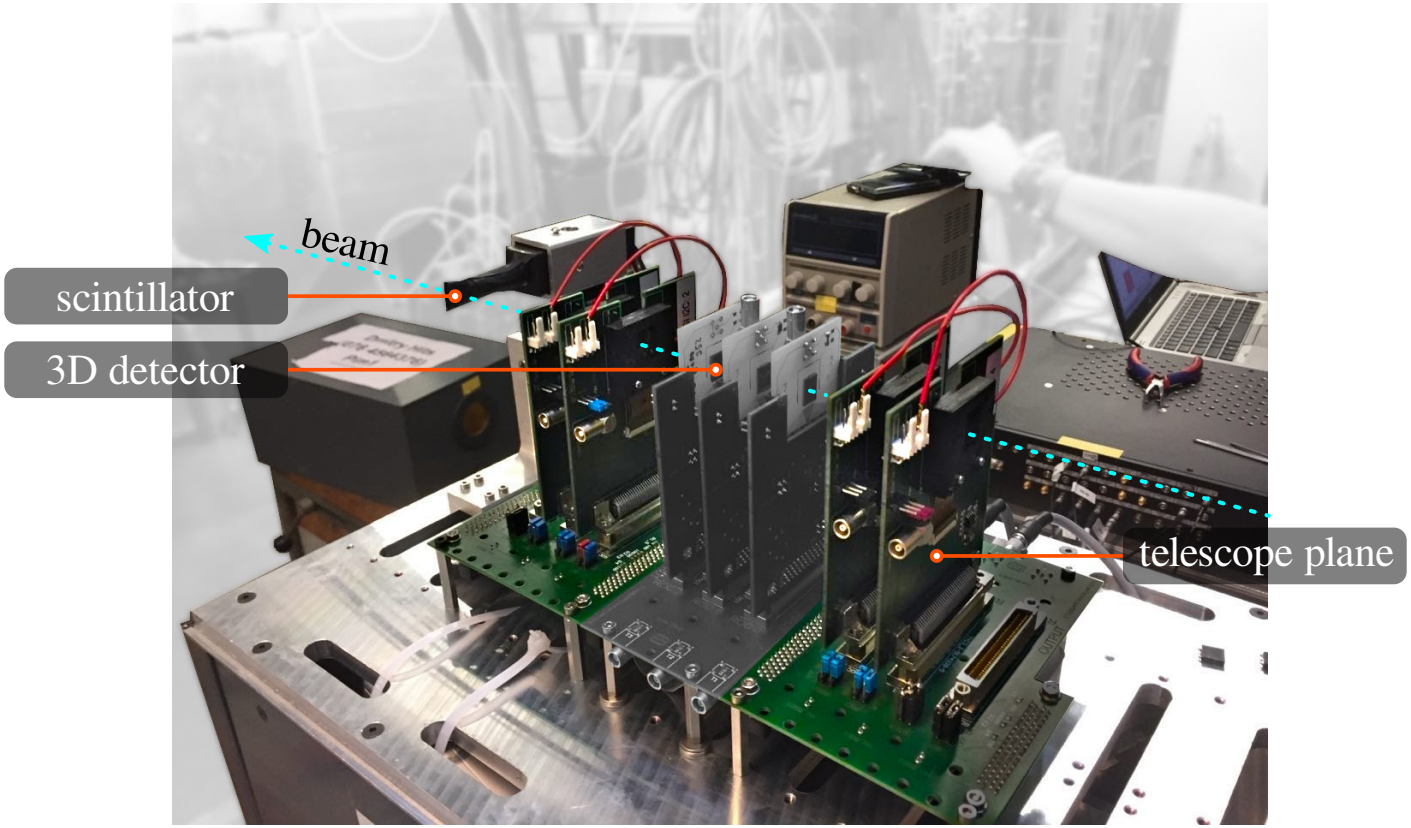
- secondary pion beam
- π^+ with 260 MeV c^{-1}
- particle flux: 1 kHz cm^{-2} up to 20 MHz cm^{-2}

Setup



- designing and commissioning beam telescope made from hybrid Si-pixel detectors
- reconstruct trajectory of the beam particles
- other instruments: digitiser, power supplies, trigger unit, NIM logic ...

Setup



- designing and commissioning beam telescope made from hybrid Si-pixel detectors
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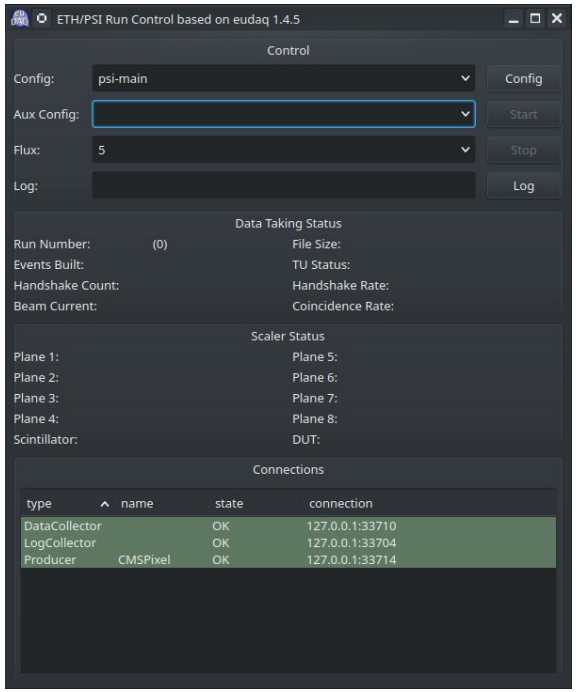
Data-acquisition



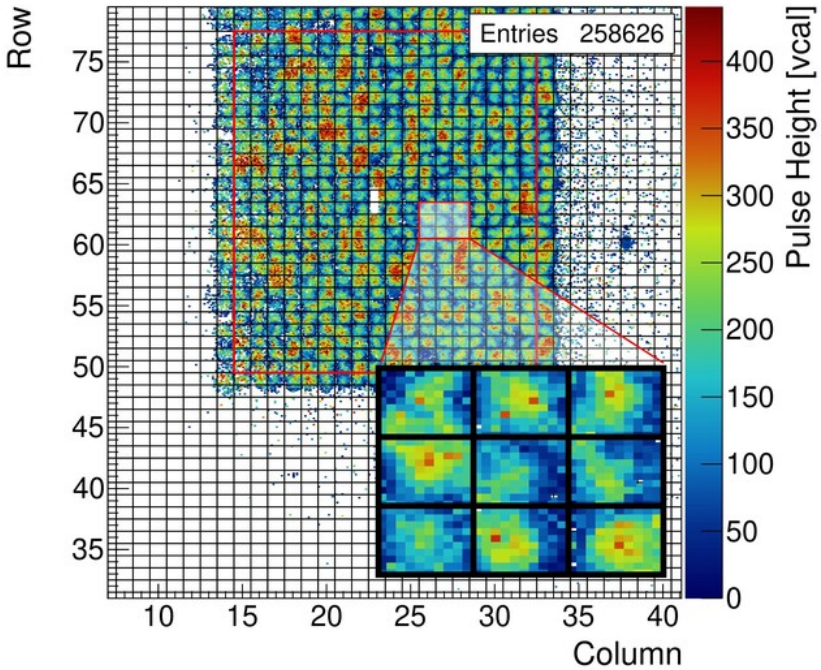
- adjusting and further developing existing software
- controlling and monitoring several devices
- save combined data stream
- long process of improvements $\rightarrow$ in the end data was taken autonomously

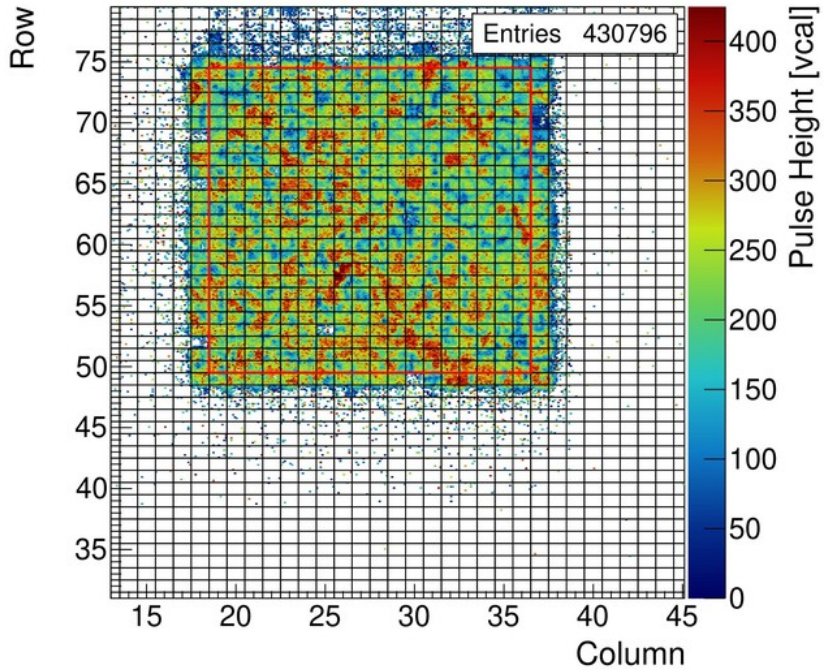
Debugging ...

```
...Configured (totale_konfiguration)

 *** Break *** segmentation violation


==========================================================
There was a crash.
This is the entire stack trace of all threads:
==========================================================

Thread 5 (Thread 0x7f0034782700 (LWP 3079)):
#0  0x00007f003bb0b12d in poll () at ../sysdeps/unix/syscall-template.S:81
#1  0x00007f003692ecf3 in handle_events () from /usr/local/lib/libftd2xx.so
#2  0x00007f003692ef0c in libusb_handle_events_timeout () from /usr/local/lib/libftd2xx.so
#3  0x00007f0036933d7d in poll_async_libusb () from /usr/local/lib/libftd2xx.so
#4  0x00007f003b808182 in start_thread (arg=0x7f0034782700) at pthread_create.c:312
#5  0x00007f003bb1847d in clone () at ../sysdeps/unix/sysv/linux/x86_64/clone.S:111

Thread 4 (Thread 0x7f00267ec700 (LWP 3080)):
```

- several beam tests $\rightarrow$ each time install setup
- many devices, various persons, different programming languages, new stuff ...
- errors occurred
- on-site debugging, programming and developing

Analysis





- developed analysis framework from scratch with ∼20 000 lines of code
- converting raw data, aligning telescope and data, tracking, analysing
- python script utilising several other scripts in python and C++

Results

- well working beam telescope
- diamond works well as particle detector
- ...more in my thesis

Michael Philipp Reichmann

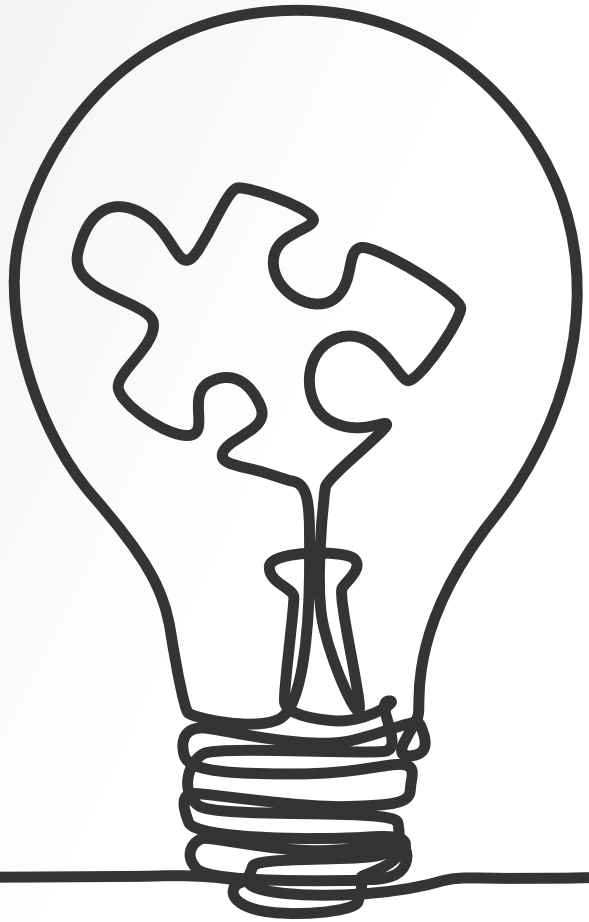
A Particle Tracker for an Extreme Radiation Environment with Strongly Changing Fluxes: pCVD Diamond

Vision

- installing & repairing detectors
- analysing & debugging software
- collaborating with colleagues
- new: working with clients

Conclusion

- excellent knowledge of detectors
- good scripting and programming/debugging skills
- experience with lab work and using/interfacing instruments
- experience in working with customers
- innovative and willing to learn



Technical Task

- Solution ...

Del Fin

PSI Paul Scherrer Institut

HIPA high intensity proton accelerator