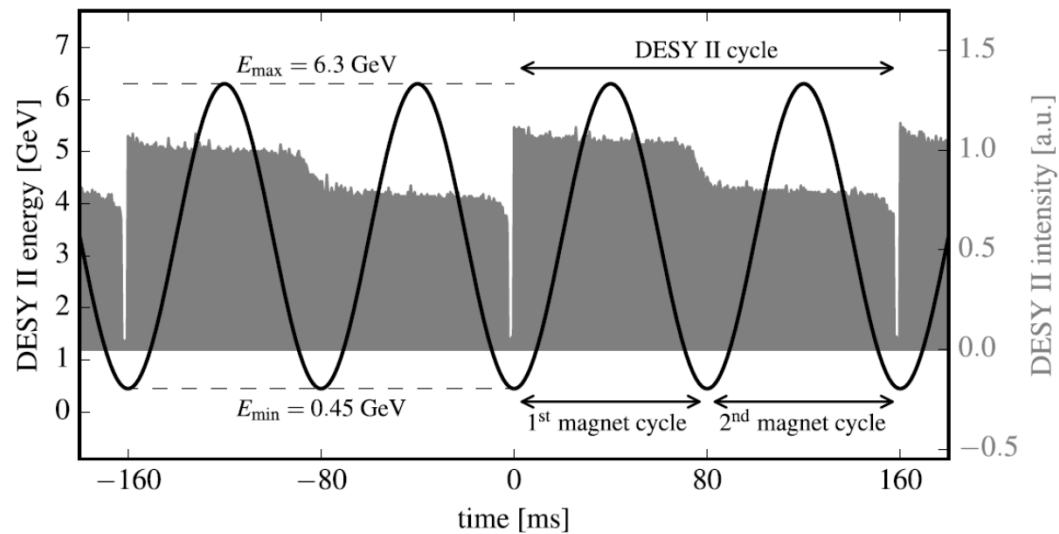


A Brief Introduction to DESY II Beam Line

Ming Shao

The DESY II synchrotron

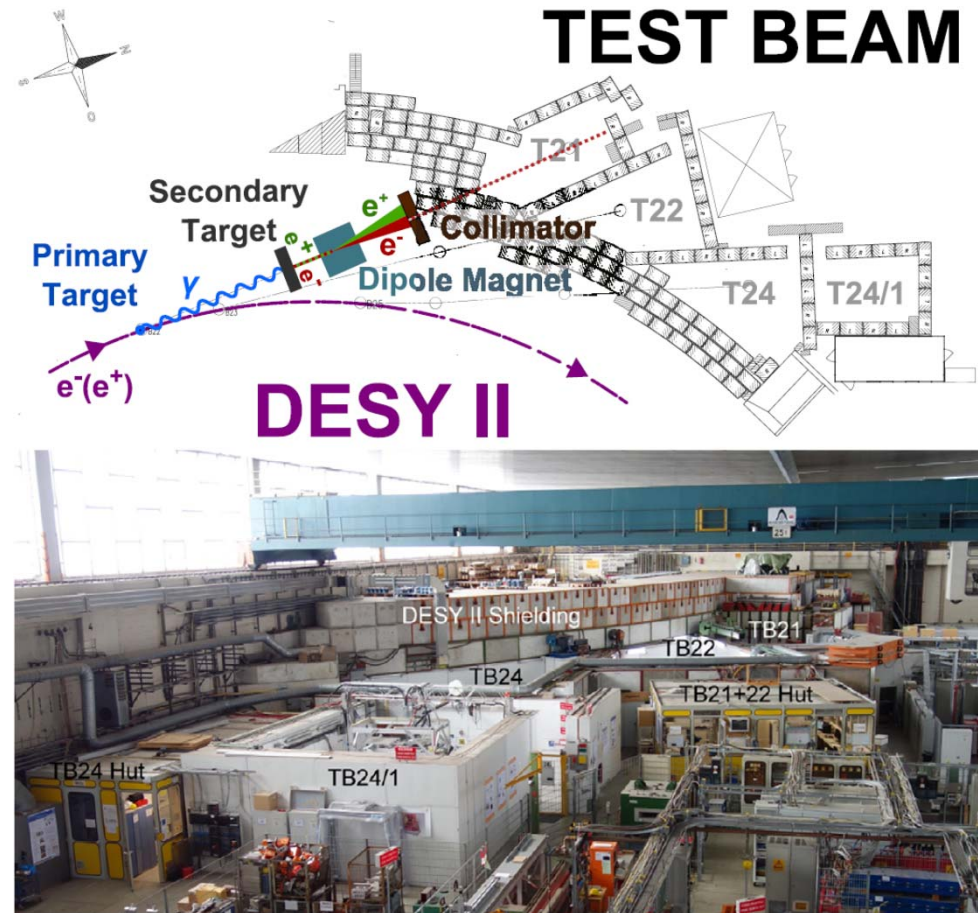
- Operation since 1985
- $E_{\text{max/min}} \sim 6.3/0.45\text{GeV}$
- $\sim 10^{10}$ particles/bunch



292.8 m circumference

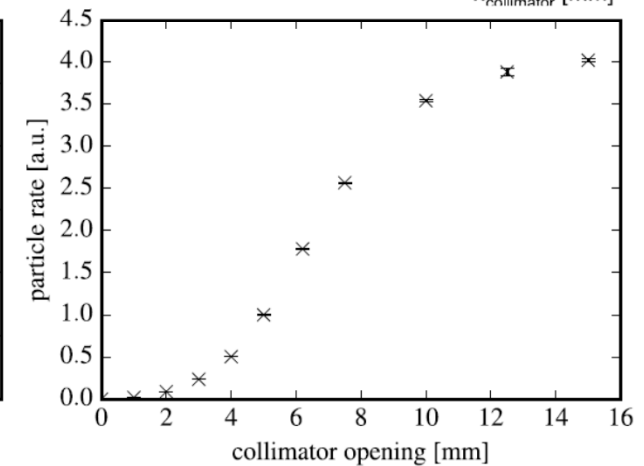
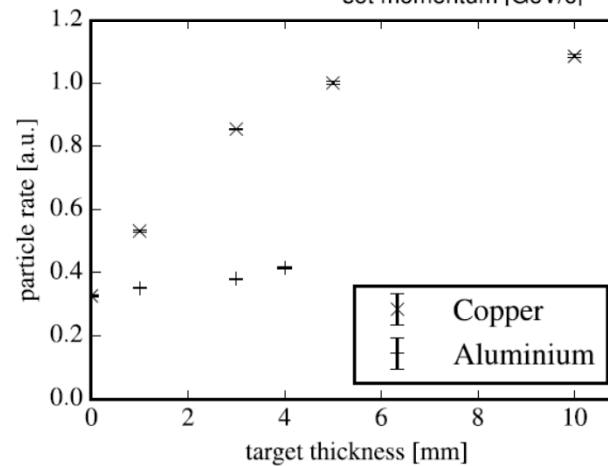
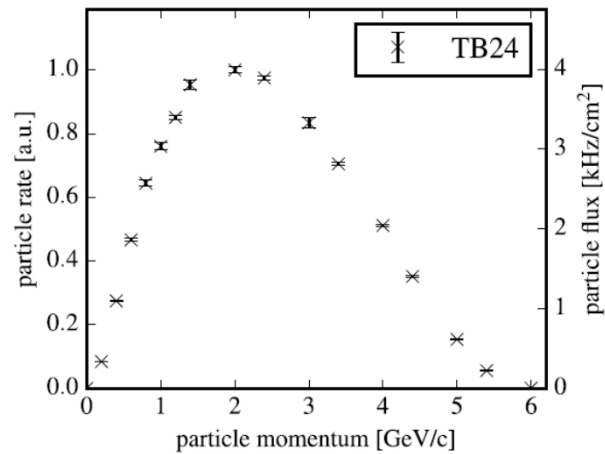
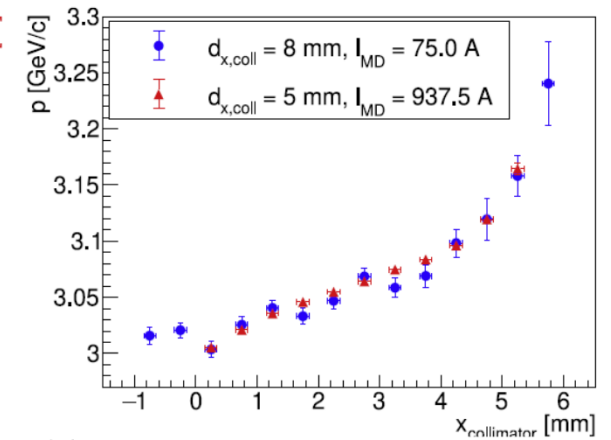
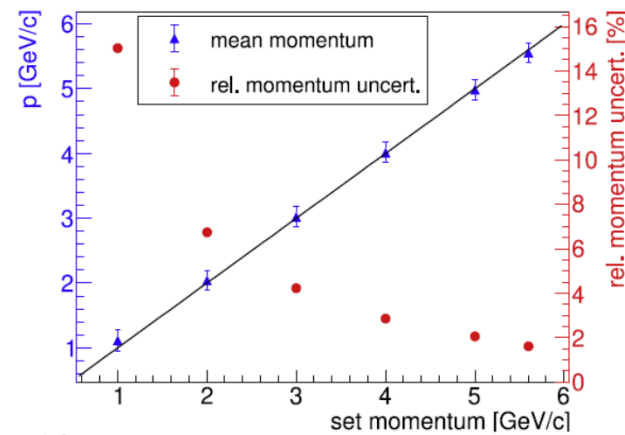
DESY II Test Beam

- 3 beam lines, 4 areas: T21, T22, T24 and T24/1
- Primary targets: 6 carbon fibers, 7 μ m in diameter and 30mm long
- Secondary targets: Al or Cu plates, 1-10mm thick



DESY II Test Beam (continue)

- Beam momentum: 0.4-6 GeV/c available
- Rate: ~10Hz-4kHz, depending on beam energy etc.

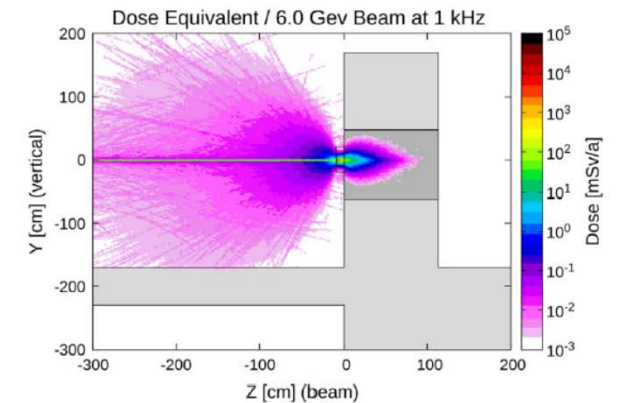
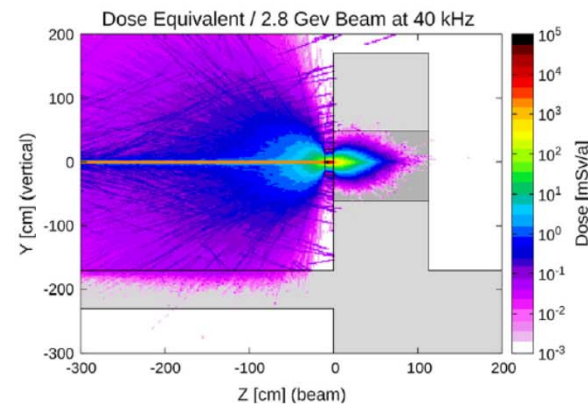
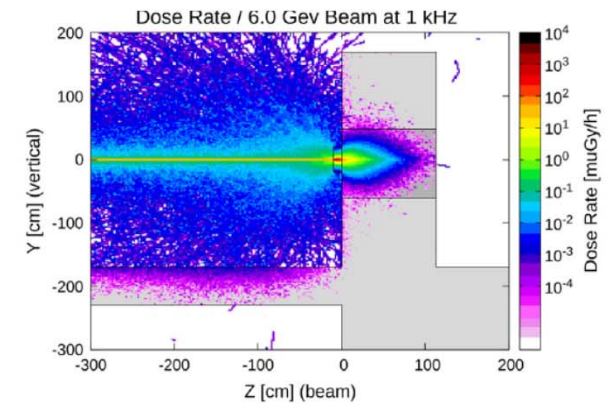
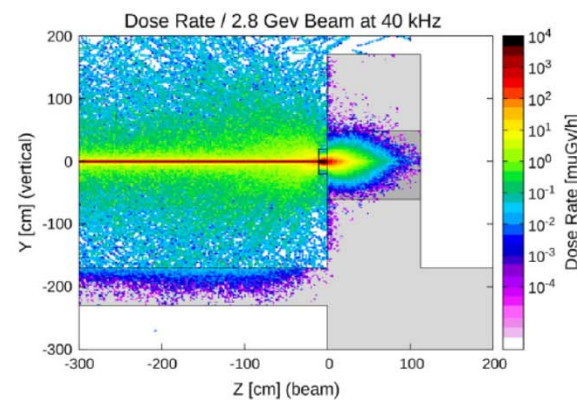


Beam Area (TB22)

- All areas provide:
 - AC power (230V or 400V)
 - Patch panels with connection to the hut
 - SHV (HV)
 - RG58 (Signal)
 - CAT7/RJ45 (Ethernet 1Gbps)
 - Stage (remote-controllable): 1T
 - CCTV (IP-based)
 - Laser (2D Alignment)
 - Cooling pipe (Water)
 - Nitrogen gas
- Several areas provide:
 - Fully-fledged gas system, only in T22 and T24
 - Dipole magnet ($>1T$), in T21
 - SC solenoid ($>1T$), in T24/1
 - Pixel telescope, in T21 and T22
 - Slow control, with sensors on T/P/H
 - EUDAQ (with EUDET type pixel telescope, $\sigma < 10\mu m$)

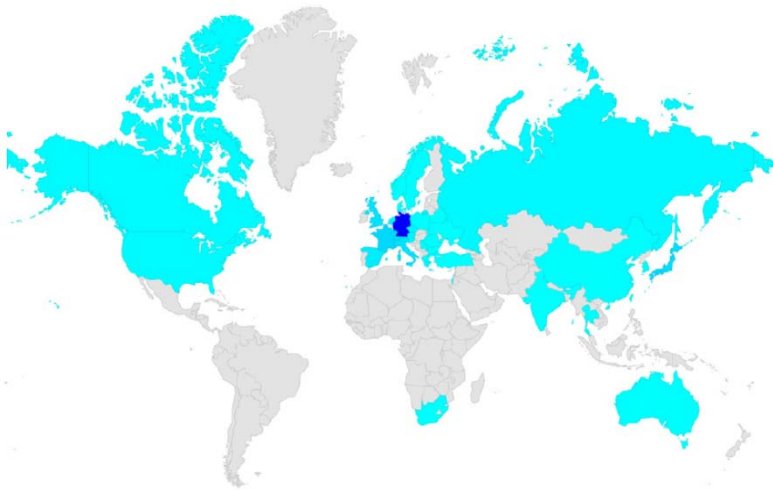
Beam Area (continued)

- Dose outside the beam area: $\ll 1\text{mSv/a}$
- Confirmed by FLUKA simulation (2000 working hours a year), dose rate $< 10^{-4}\text{Gy/h}$

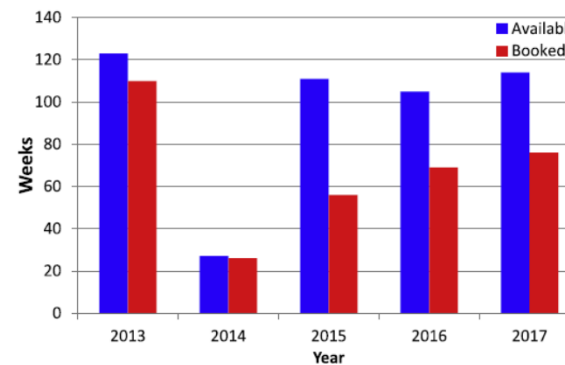


Beam Usage

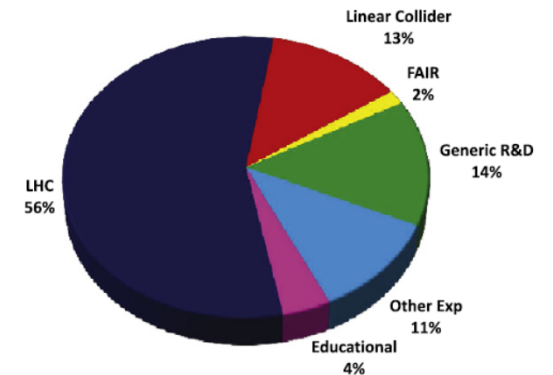
- Normally 35-40 weeks a year, ~120 user slots (1 user slot = 1 week)
- ~50% Germany user, ~30% European user, ~20% other user
- DESY II beam available to at least 2025



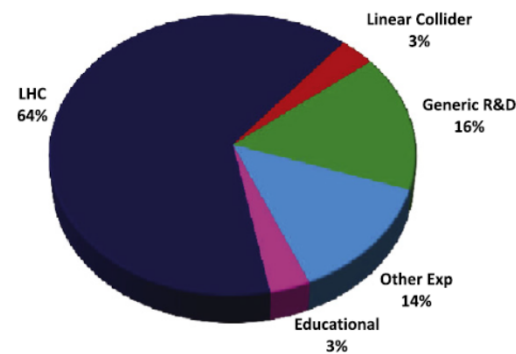
User Weeks 2013-2017



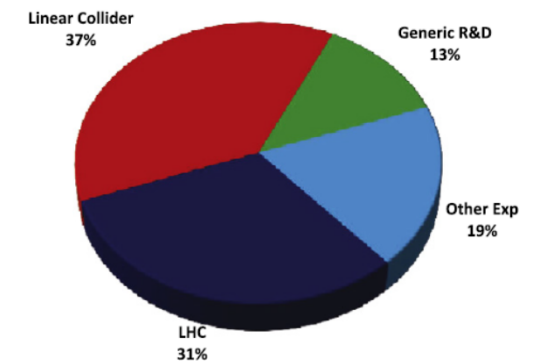
Beam Time Usage 2015-2017



Telescope Usage 2015-2017



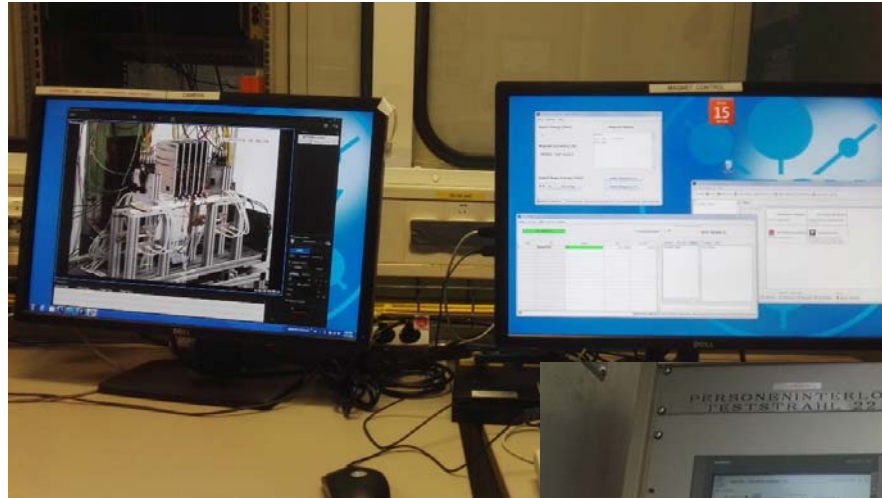
PCMAG Usage 2015-2017



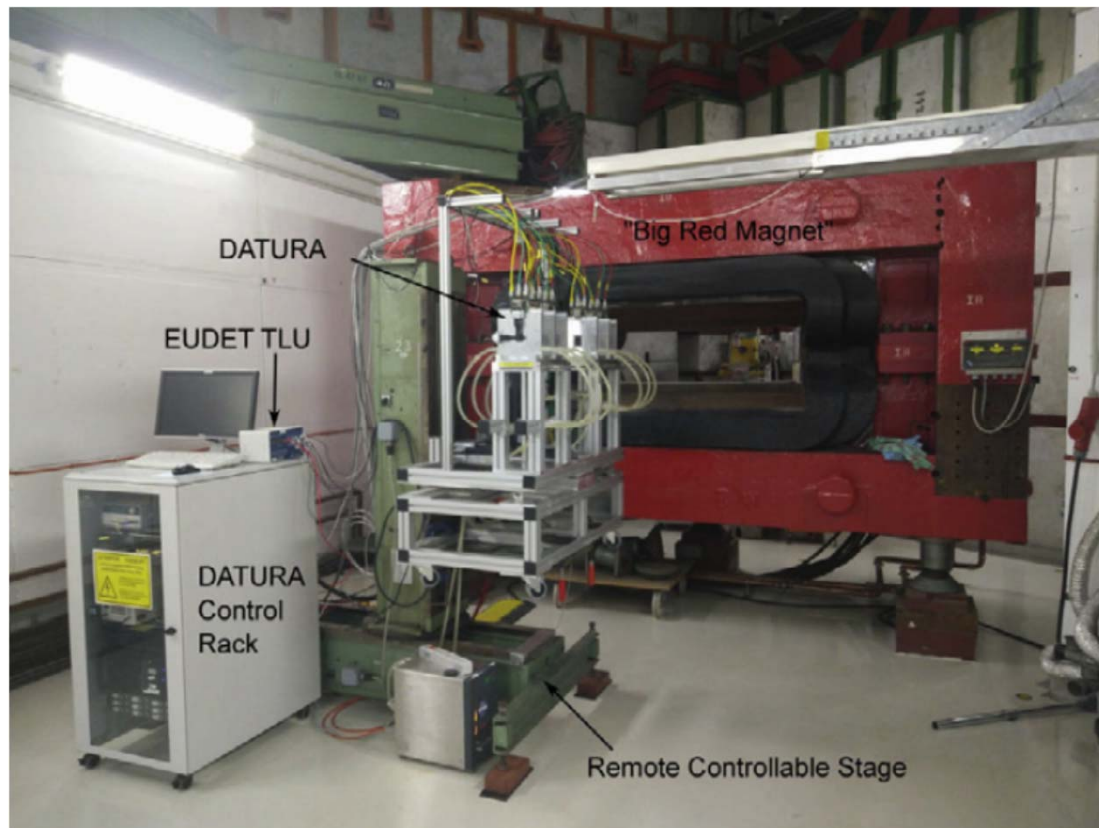
Test Beam Photos



Test Beam Photos



Test Beam Photos



Trip to DESY

- Visa (Schengen, Germany)
- Hostel booking:
https://welcome-services.desy.de/hostel_in_hamburg/index_eng.html
- More info:
https://welcome-services.desy.de/e56138/Booklet_eng.pdf



DESY TB Rules

- All users need to register in the DESY Indico system
- A [DACHS](#) card is mandatory to get an access to the DESY test beam
 - Everybody who is working at the test beam has to attend a mandatory safety lecture
 - Safety training Mondays 13:00 in the ATLAS Conference Room (Building 1c/room O1.310 (1st floor))
 - Safety training for the test beam facility is valid for one year
- Hazardous materials must be announced beforehand and cleared with the test beam coordinators.
- Safety rules during beam test:
 - Escape routes must be kept clear at all times.
 - Smoking and open fires are not permitted in the Hall.
 - Eating and drinking (non-alcoholic beverages only) is only permitted inside the huts.
 - Working alone at the Test beam is only permitted during normal working hours (Mo-Fr, 0800-1700). Otherwise the two-man rule is in effect.
 - No climbing on the walls or the huts.
- After the end of the experiments all users have to **remove their equipment and garbage** from the test beam area.

Beam Test Plan (Sept. 9-23, 2019)

- 做好实验规划，事先准备好设备
 - 部分实验要求事先和DESY方面沟通（如气体、装配间等）
- 分步进行，人数（在DESY）适当
 - 8月底-9月初先期人员到DSEY安装实验装置并完成调试
 - 之后按实验规划逐步安排人员
 - 做好实验记录和数据存储
- 衣食住行安排
- 是否还需要在国内申请束流？