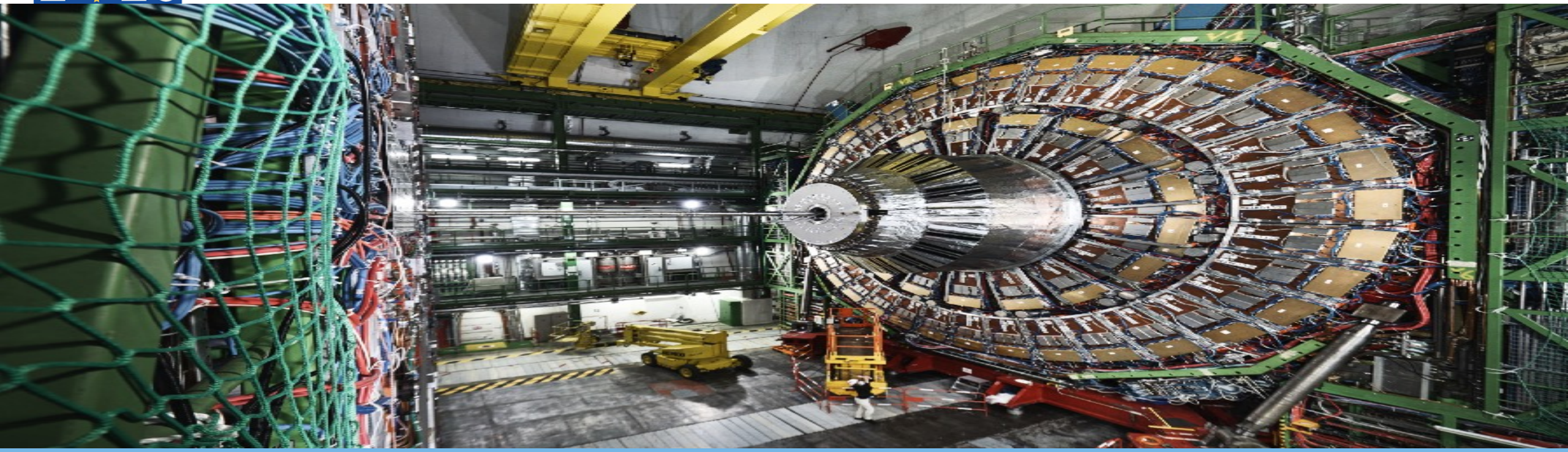


TA1 - Transnational Access to COSY

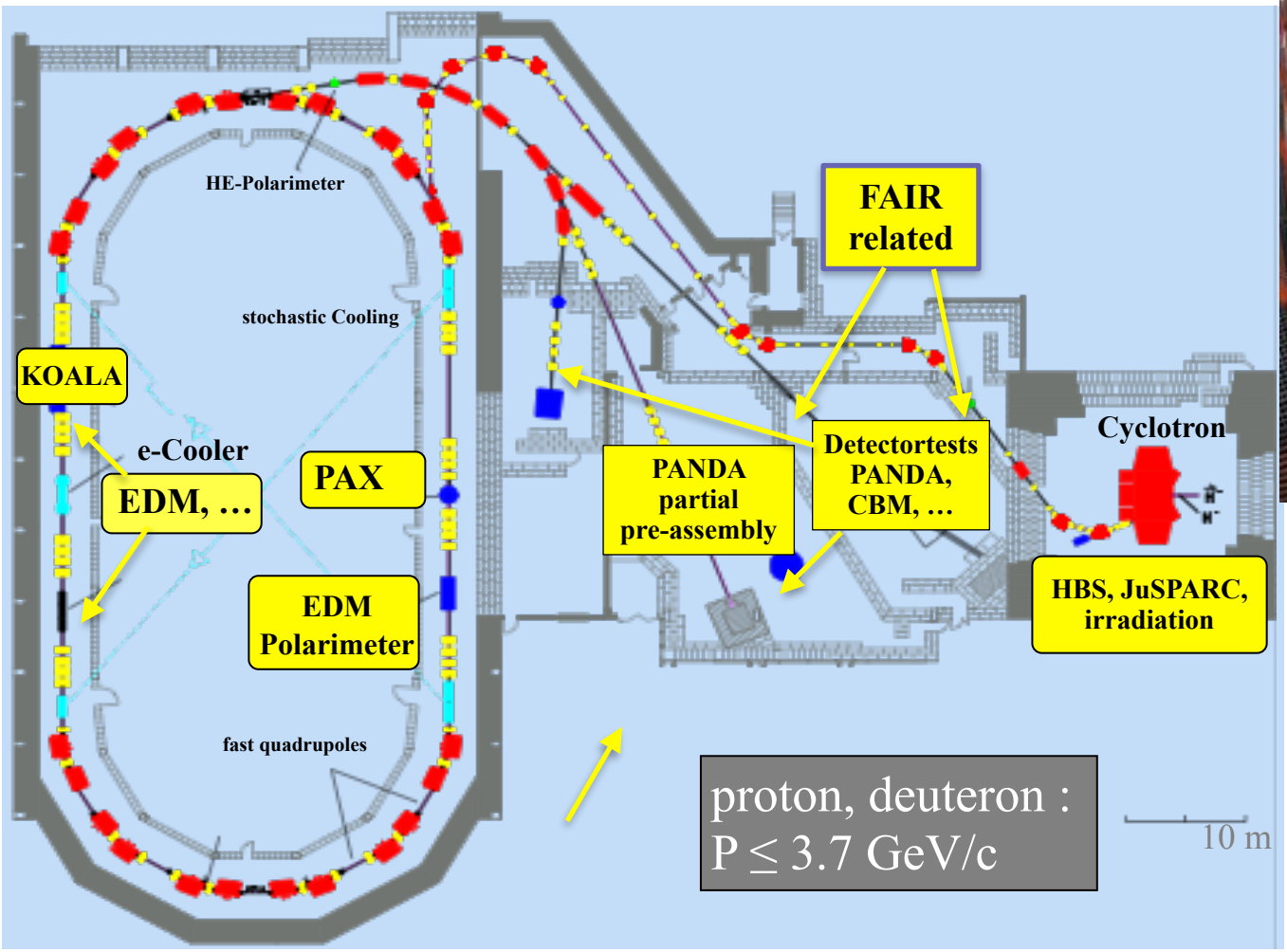
Dieter Grzonka, Nuclear Physics Institute, Forschungszentrum Jülich

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093

layout of the presentation:

1. Cooler Synchrotron COSY
2. COSY activities 11/20 - 10/21
3. EU supported projects
4. Deliverables according to GA
5. Actually provided access
6. Publications
7. Summary

COSY Infrastructure



Cyclotron < 300 MeV/c

Cooler-Synchrotron COSY < 3.7 GeV/c

$5 \cdot 10^{10}$ stored p,d unpolarized, polarized

phase space cooling

internal, external target stations

Activities at COSY 11/2020 - 10/2021

Accelerator Physics

- Orbit feedback
- COSY beam cooling (2 MeV e-cooler)
- Palmer Pickup studies

EDM studies

- JEDI, First electric dipole moment measurement of the deuteron with the waveguide RF Wien Filter

Irradiations with cyclotron beam

- Irradiation in view of neutron production studies
- Irradiation of electronic components

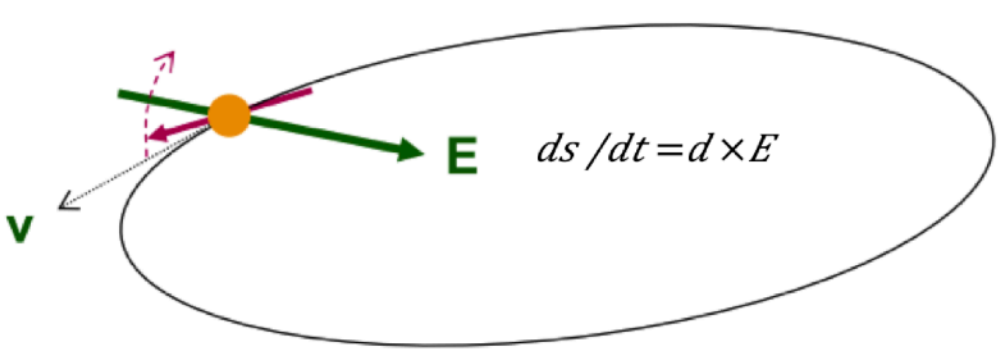
FAIR related activities, detector tests

- PANDA Luminosity Detector test (HV-MAPS Monolithic Active Pixel Sensors).
- PANDA Cluster target studies
- CBM / HADES, detectortest (MDC, ultrafast silicon detectors LGAD)
- HADES iTOF, test of detector modules
- KOALA , elastic pp-scattering at low t (feasibility study of high precison elastic (pbar,p)-scattering
- Ay of elastic (p,p)-scattering, Detectortest

EU supported projects

First electric dipole moment measurement of the deuteron with the waveguide RF Wien Filter

principle:
horizontal polarized beam ;
electric field → buildup of vert. pol.

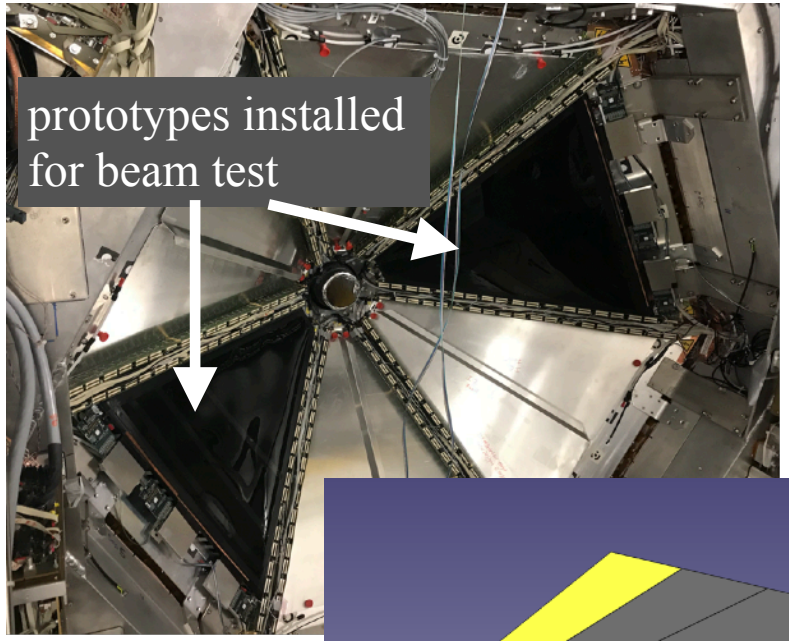


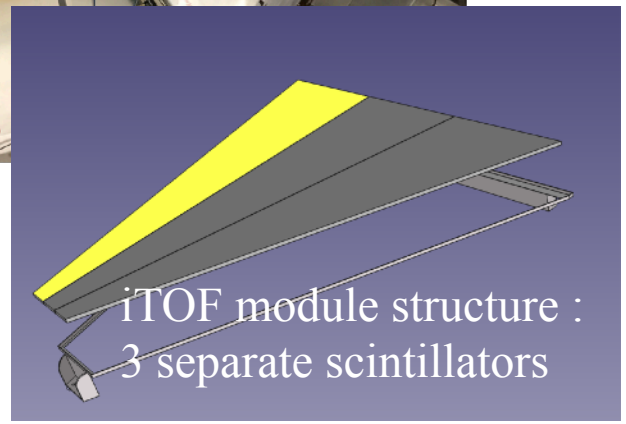
careful preparations

- beam based alignment
- precise polarimetry
- long spin coherence time (>=1000 s)
- phase locking of spin precession to RF Wien filter
- multi bunch operation (pilot bunch without RF field
- …

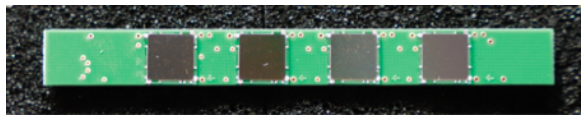
- spin tracking simulations for analysis

Test of HADES InnerTOF detector Modules

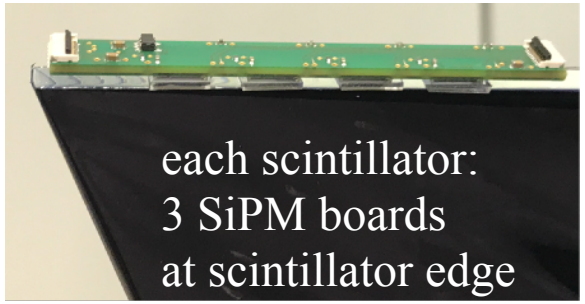




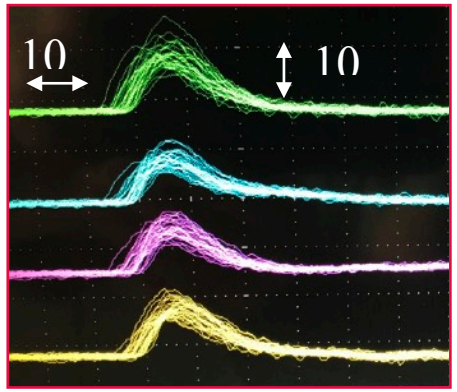
read out: SiPM (6x6 mm²)



SiPM board with 4 SiPMs



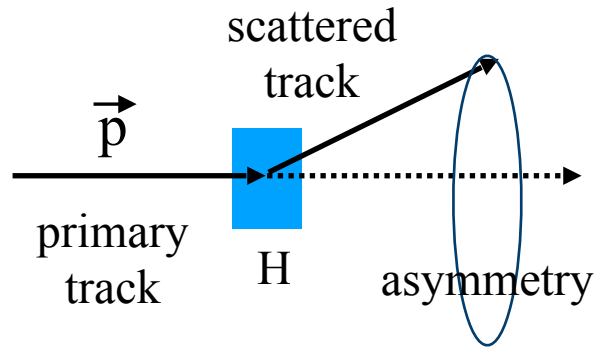
SiPM-signals (fast)



Detector test

preparation of Ay measurement of elastic pp-scattering in the CNI region

(setup to be used for antiproton polarization studies at CERN)



straw tubes,
scintillating fiber,
Cherenkov counter,
DIRC

TA1 - Transnational Access to COSY

Transnational Access Provision - beam hours (unit cost 90 €/hour)
Travel support for user

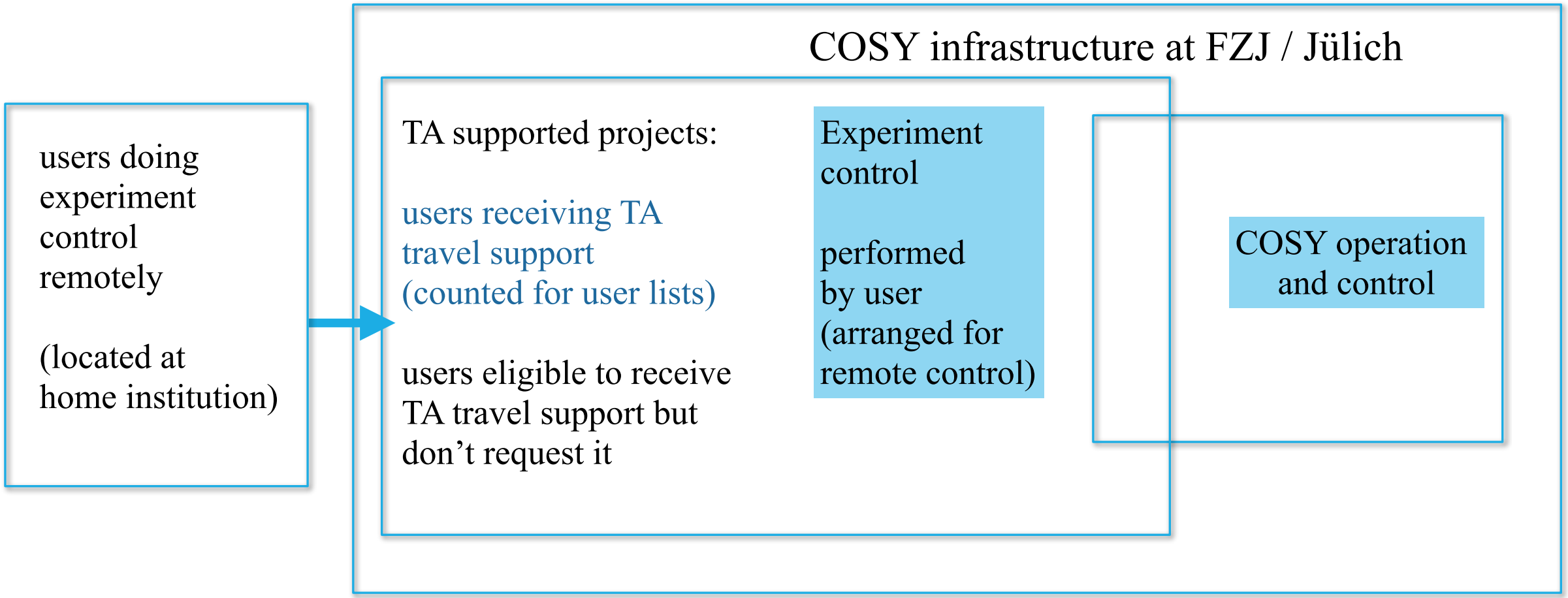
Deliverables (according to GA)	first 18 months	whole project	29 months 06/2019 -10/2021
Min. quantity of access to be provided	600	1600	967
Estimated number of users	42	112	68
Estimated number of user days	252	672	406
Estimated number of projects	12	32	19

Provided access within 31.10.2021

Deliverables	first 29 months according to GA	achieved
Min. quantity of access to be provided	967	1168
Estimated number of users	68	42
Estimated number of user days	406	461
Estimated number of projects	19	6

only users receiving EU travel support

Users , who profit from EU support



Publications

Beam-based alignment at the Cooler Synchrotron COSY as a prerequisite for an electric dipole moment measurement

T. Wagner *et al* 2021 *JINST* 16 T02001

A new beam polarimeter at COSY to search for electric dipole moments of charged particles

F. Müller *et al* 2020 *JINST* 15 P12005

Development of hadron calorimeter modules based on LYSO scintillator crystals

to be submitted for publication

Summary

COSY was operated without interruptions due to covid situation.

Deliverables concerning access provision and travel support were fulfilled.

COSY will be operated until end of 2024.