Belle II
Germany

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Bundesministerium
für Bildung
und Forschung

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Belle II Project

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
SuperKEKB/Belle II		Run ~0.8/ab	LS1	Run ~ 10/ab				LS2	Run > 50/ab				

PXD2 → (LS1)   Upgrade → (LS2)
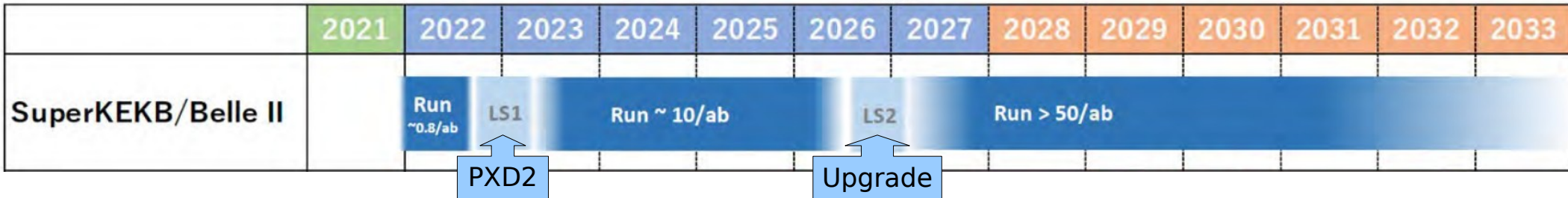
- **Rich physics program**
- **Confirmation of flavor anomalies?**
- **Unique opportunities**
- **… (see talk by Torben Ferber)**

4 | Other essential scientific activities for particle physics

European Strategy Update

A.   The quest for dark matter and the exploration of flavour and fundamental symmetries are crucial components of the search for new physics. This search can be done in many ways, for example through precision measurements of flavour physics and electric or magnetic dipole moments, and searches for axions, dark sector candidates and feebly interacting particles. There are many options to address such physics topics including energy-frontier colliders, accelerator and non-accelerator experiments. A diverse programme that is complementary to the energy frontier is an essential part of the European particle physics Strategy. *Experiments in such diverse areas that offer potential high-impact particle physics programmes at laboratories in Europe should be supported, as well as participation in such experiments in other regions of the world.*

KET Statement:

Running and approved Collider Projects

The physics potential of the experiments at the LHC and its upgrade, the HL-LHC, as well as at SuperKEKB must be fully exploited.
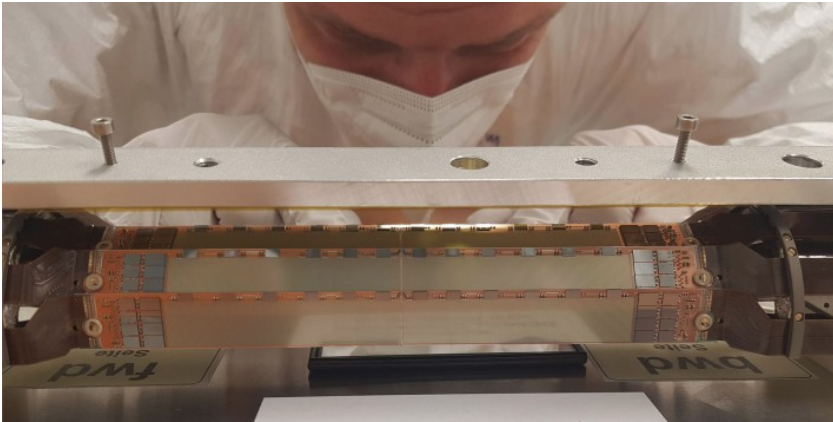
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German Participation

- 7 Universities: → new Prof Ferber
  → succession Paul?

- 1 Helmholtz Centre: → succession Niebuhr?

- 2 Max Planck Institutes: → succession Caldwell?

Belle II Members
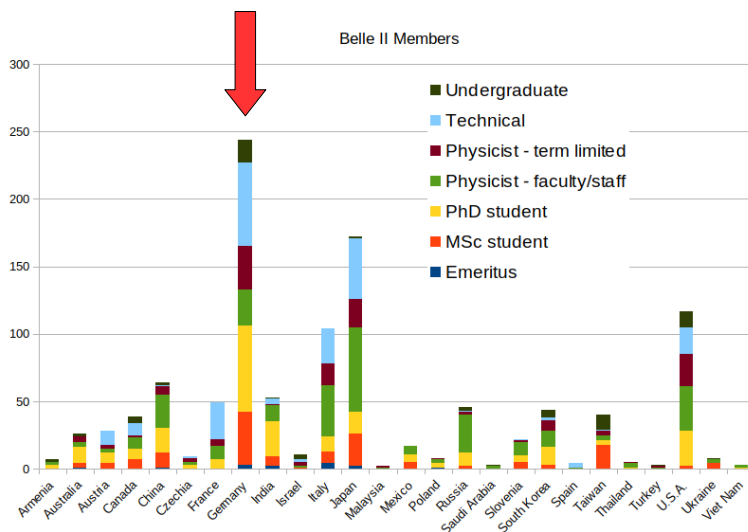
- Largest group in Belle II

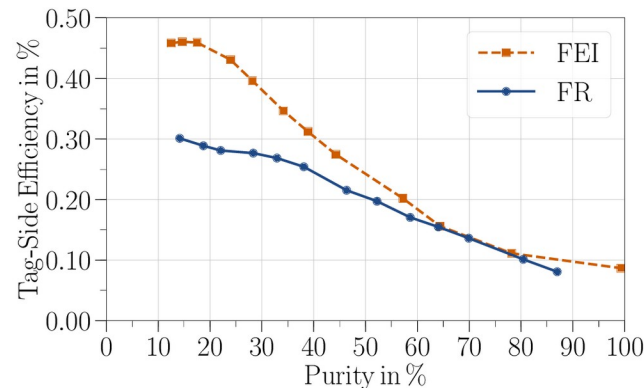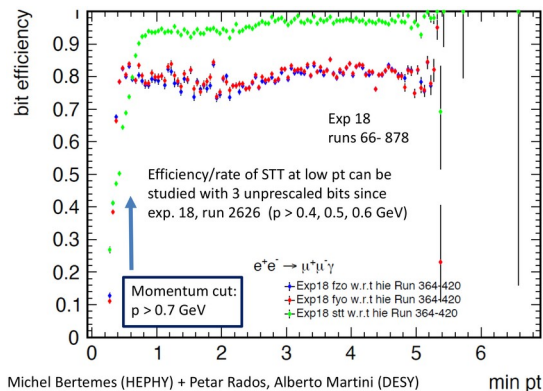- 19% of authors

German Contributions (to Operations)

https://github.com/belle2

Belle II Analysis Software Framework (basf2)

DOI 10.5281/zenodo.5574115   License LGPL v3 or later

This repository contains the main software of the Belle II experiment.
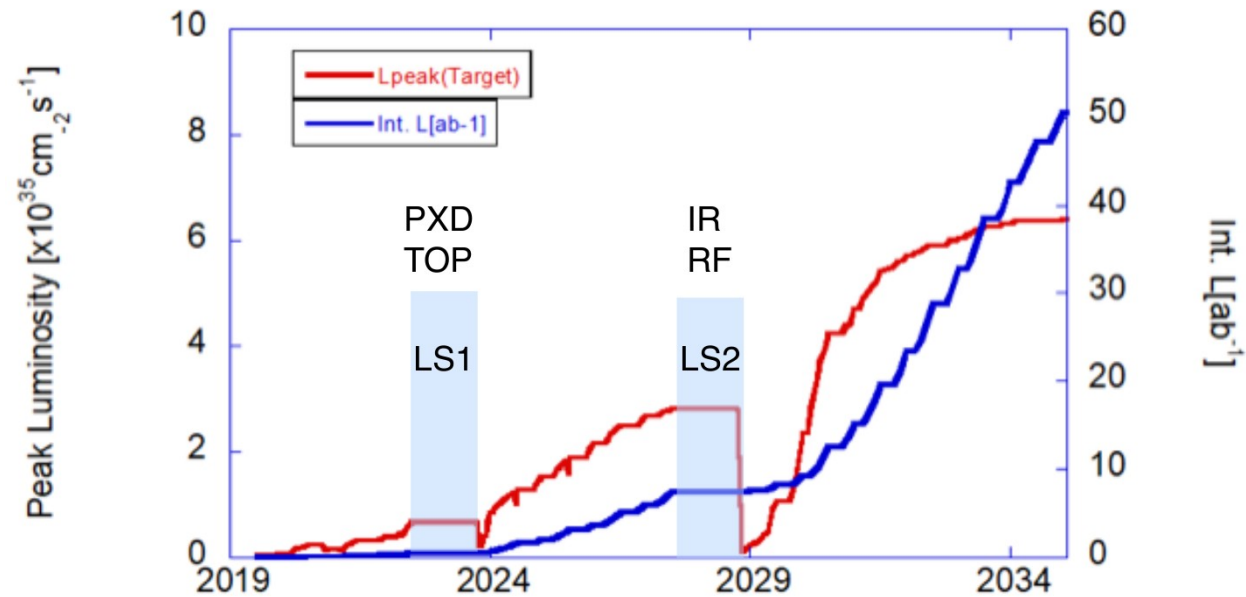
Software

New Pixel Vertex Detector (PXD2)

- Trigger
- Computing
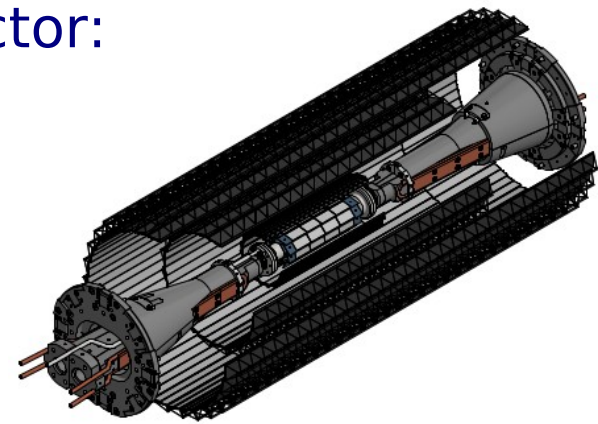- Collaborative Services
- Analyses
- Theory

Upgrade Considerations for LS2

> New interaction region probably needed for accelerator upgrade

> Performance improvements due to better technologies

> Enhanced trigger capabilities

→ Considered technologies for vertex detector: DMAPS, Thin Strips, SOI

- CDR in 2023
- TDR in 2024

Conclusions

- The operation of PXD, NeuroTrigger, Software, Computing, and Collaborative Services must be ensured.

- Analysis activities must not be reduced.
    - ➜ *Discussion item: Better no BMBF funding than too little?*

- The basis for a strong German participation in the next next funding period must be laid → Upgrade project

- Sustainability is very important
    - ➜ Long term commitments of scientists, institutes, and funding agencies
    - ➜ Long term perspective for young scientists

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