

🌸 Belle II Monthly - July 2025

Your friendly monthly digest keeping the Belle II community connected.



Person of Interest of the Month: Karim Trabelsi

Interview with Karim Trabelsi, former Belle II Spokesperson @ EPS-HEP 2025



How does it feel to return to Marseille for a plenary, where you once did your PhD?

“It feels like a loop, a new beginning. I’m just enjoying being here in the moment.”

Anything you missed?

“Everything! The town, the people, the sea. The Mediterranean is the cradle of civilization.”

What will you miss from Japan?

“Half my family is there - Japan is part of me. Wherever I go, I carry it with me.”

You presented results from Belle and Belle II. Any key points?

I wish the talk was titled only “Belle II highlights”, but Belle data still plays a crucial role due to limited statistics. For example, in B-tagging, Belle initially

appeared superior—but the root cause was software and calibration issues in Belle II. Ongoing studies are systematically addressing this.

What about the comparison to LHCb?

Karim emphasized Belle II's strengths: "We are much better than we think—especially in flavor tagging, neutral modes, and missing energy. But we need SuperKEKB to deliver now."

A message to the collaboration?

"Belle II and SuperKEKB must act as one project. Without data, we won't reach our potential. The collider must step up."

And your future plans?

Karim is focused on improving the High-Level Trigger (HLT), smarter data access, and better B-tagging. "We could not show any Run 2 results since it takes too long to process things. With more data this will get even more challenging. Let's stop complaining and act." He sees huge potential in semileptonic tags and more collaboration across the board: "Let's do things together—we're not saving the world alone."



Upcoming Events & Deadlines

- 📍 Lepton Photon 2025, 25th - 29th August 2025, Madison, Wisconsin, USA
- 📍 Anomalies and Precision in the Belle II era Workshop, 8th - 10th September 2025, Vienna, Austria
- 📍 CKM 2025 -- 13th International Workshop on the CKM Unitarity, 15th - 19th September 2025, Cagliari, Sardinia, Italy
- 📍 Important Deadlines: CWR1 for Lepton Photon 18th August / CWR1 for CKM 8th September



State of the Experiment

Preparations for Run 2025c are progressing well, with solenoid and ESR1 magnet ramp-up scheduled for late October and **Main Ring operation starting November 5**. CDC continues detailed cosmic runs with varying gas mixtures to optimize performance, while KLM has completed front end electronics maintenance and is preparing DAQ tests to resolve the last remaining issues. The **ARICH cooling issue** has been **resolved** by removing

clogged couplers, and further upgrades, including new chillers and monitoring systems, are planned. DAQ and computing systems are undergoing upgrades and testing, with particular attention to injection background filtering and trigger system stability. A **KEK campus-wide power outage** is scheduled for **August 1–5**, during which raw data transfer and computing services will be paused—users planning early August runs should coordinate with the computing team. Across subsystems, final commissioning efforts and hardware optimizations are ramping up to ensure readiness for beam time. The **shift booking for 2025c opened**, so **please sign up for shifts**.



Physics Highlights

Check out our latest result:

[\[Observation of the decays \$B^+ \rightarrow \Sigma_c\(2455\)^+ \Xi_c^-\$ and \$B^0 \rightarrow \Sigma_c\(2455\)^0 \Xi_c^-\$ \]](#) -

[First observation of these two-body baryonic decays using Belle and Belle II data; BF in tension with predictions from QCD sum rules]. Led by Y. Li, C. P. Shen.

[\[Search for an Axion-Like Particle in \$B \rightarrow K^{\(*\)} a\(\rightarrow \gamma\gamma\)\$ Decays at Belle\]](#) -

[Search for Axion-Like particles in $b \rightarrow s$ transitions using Belle data, pushing existing limits on ALP masses]. Led by S.-J. Cho.

[\[Charged-hadron identification at Belle II\]](#) - [Documenting our charged hadron

identification algorithms and their performance in run 1 data]. Led by A. Albert, J. V. Bennett, S. Bilokin, R. A. Briere, S. Das, A. Di Canto, A. Gaz, D. Greenwald, C. Hainje, S. Hazra, M. Hernández Villanueva, J. Kumar, S. P. Maharana, G. B. Mohanty, S. Pokharel, P. Rados, G. Raeuber, S. Sandilya, X. Simo, L. Santelj, M. Starič, J. Strube, U. Tamponi, F. Testa, V. S. Vismaya, S. Wallner.

[\[Determination of \$|V_{cb}|\$ using \$B \rightarrow D^* \ell \nu\$ Decays at Belle II\]](#) - [Precision determination of V_{cb} with a stunning 2.1% uncertainty]. Led by P. Horak, C. Schwanda.



ESPP Update

More than 600 scientists gathered in Venice in June 2025 to shape the future of European particle physics during the Open Symposium of the European Strategy for Particle Physics (ESPP) update. A strong theme throughout the week was the need for a broad and balanced programme, with flavor physics

recognized as a central pillar of discovery in the coming decades. Belle II and its proposed upgrade program were explicitly acknowledged as key priorities in this area, offering unique sensitivity to rare processes and complementarity to high-energy collider experiments.

What is best experimental scenario for flavour physics? Theory discussed later

Full exploitation of the HL-LHC <ul style="list-style-type: none">• LHCb Upgrade II (300/fb)• Enlarged flavour physics programme at ATLAS and CMS (3/ab)• Data taking completed by ~2041	Completion of SuperKEKB/Belle II <ul style="list-style-type: none">• 50/ab e^+e^- collisions at Y(4S) resonance (likely to require interaction region upgrade)• Data-taking completed by ~2042	Full FCC programme <ul style="list-style-type: none">• FCC-ee with<ul style="list-style-type: none">- significant Z pole run- ability to vary \sqrt{s} and $+$- detectors optimised considering flavour• FCC-hh with<ul style="list-style-type: none">- dedicated flavour physics experiment- sufficient R&D lead-time
---	---	---

Complemented by dedicated kaon, pion, muon and EDM experiments

The symposium featured vibrant discussion around the next major facility to succeed the LHC, with widespread support for the Future Circular Collider (FCC) and continued evaluation of linear, muon, and compact collider options. The updated strategy will be finalized by the end of 2025 and submitted to the CERN Council in early 2026. The Venice meeting reaffirmed the commitment to an ambitious roadmap that maintains CERN as a world-leading center while ensuring critical investments across the full spectrum of particle physics, including precision flavor experiments.

Photos of the Month



Laura Zani received the EPS-HEP Young Experimental Physicist Prizes for outstanding contributions to Belle II and searches for physics beyond the Standard Model.

A mockup of the mechanics for the inner VTX layers (iVTX), to be installed during the foreseen long-shutdown 2 (LS2) in 2032, and designed by ideas and contributions from the VTX collaboration.

Call for Contributions

Have news, papers, or photos to share? Email zjl@hiroshima-u.ac.jp for the next Belle II Monthly.

Belle II Monthly is curated by the Belle II Outreach Group and published monthly.
© Belle II Collaboration 2025