PRC100 Short Recommendations

DESY Physics Review Committee – 100th PRC Meeting 11/12 November 2025

At its 100th meeting on 11-12 November 2025, the PRC reviewed all groups, projects and activities of particle physics at DESY. The occasion of the 100th meeting of the committee was marked by a celebratory colloquium featuring former DESY Directors and PRC chairs.

The LHC and the ATLAS and CMS experiments have performed exceptionally during 2025 data-taking, surpassing the 2024 integrated luminosity despite a shorter proton run. Exciting new physics results continue to come from the DESY groups, including the observation of tWZ associated production at CMS and a recent ATLAS result on di-Higgs production analysing more than 300 fb^{-1} of data. In Japan, the SuperKEKB collider has just restarted after targeted improvements to the accelerators, with the goal to complete a 1 ab^{-1} dataset for Belle II by summer 2026.

The HL-LHC upgrades continue to make progress. However, recent problems observed in an on-detector DC-DC converter circuit (bPOL12V) designed by CERN, and used on the tracker and calorimeter modules, threaten the progress made in the local module construction and generally pose a significant risk to the LHC upgrade projects. While investigations continue at CERN and elsewhere of the failure causes (e.g. radiation effects, temperature levels, operation modes), the impact on the DESY construction projects is unclear, and module production has been halted or is being delayed. It will be very important to monitor the developments closely, assess the specific implications for the DESY projects, and prepare mitigation and recovery plans, including adjustments to technical staffing.

The readying of the first ALPS II publications is an important milestone. The PRC have also noted the strong support to grow the DESY axion programme expressed by the German particle and astroparticle communities in their respective ESPPU inputs. Such a strong, leading, non-collider programme and associated infrastructure complement the DESY collider-based activities. BabyIAXO is making progress on funding: it is urgent to define the construction model for the BabyIAXO magnet. A new location for BabyIAXO has recently been identified, and the PRC endorses this new choice, which offers clear advantages. MADMAX is targeting an installation at the HERA-North site with an intermediate magnet, currently under tender, around 2030. Both projects need now to develop their planning for installation and operation at DESY.

With the ELBEX EU grant for an extraction beamline from the European XFEL, the LUXE experiment continues to make progress towards its realisation. As for the axion experiments, the next implementation steps are urgent, including being able to provide clear plans to the collaboration. The PRC encourages the LUXE and ELBEX teams together with the DESY and European XFEL managements to ensure this project can proceed expeditiously.

Related to the implementation of the projects above, the committee welcomes the creation of a Project Advisory Board and Project Support Office as an important step towards stronger coordination of local projects, and follows with interest their development. The committee believes that DESY must clarify and communicate soon the modus operandi of these new structures, ensuring that project pathways, timelines and responsibilities are well understood by all stakeholders. The interplay of the scientific review role of the PRC with the new bodies should also be clarified.

Other highlights comprise the following:

- The testbeam facility has again performed well in 2025 with a wide user community. The future of the facility in the PETRA IV era should be secured, given its importance for DESY's own R&D activities and also for the European and wider international landscape.
- The DESY theory group continues to perform excellent research. It also provides direct support and conceptual framing for DESY experiments and attracts top international researchers to Germany.

– The FH platforms for detector R&D and for scientific computing are in operation. Their value in setting priorities across FH activities is recognised by the PRC.

Staffing reductions and hiring restrictions have impacted and increased risks in many activities. A notable example is that the staffing for key enabling work of importance to a wider community is at a critical level. In several areas, lower numbers of doctoral and postdoctoral researchers lead to reductions in scientific output. In some cases, the retirements of people with long-standing key expertise bring the danger that capabilities are lost completely. Since 2021, FH has reduced and reorganised its workforce in particle physics research, leading to an overall reduction of 5% (in FTE), dominated by the reduction in non-permanent scientific personnel of -20% (in FTE). Especially in view of this situation, the PRC is pleased to see success in attracting third-party funds in different areas. However, the committee notes that this can bring its own risks, especially where base funding has become marginal.

The PRC noted the group's preparations for the PoF V proposal submission for the MT and MU programmes. The breadth of engagement in external collaborations, on-site experiments, theory, enabling tasks, AI/ML, detector R&D, and others, constitutes an impressive programme.

The committee notes the need for a timely replacement of the computing centre, as indicated by the recent failures in the fabric of building 2.