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Strategic Imperative: Investing in Accelerator R&D and Technologies for the Future of Particle Physics and Societal Impact –Comments in the framework of the European Strategy for Particle Physics (ESPP) update by the German Committee of Accelerator Physics (KfB)

Abstract: This document outlines recommendation for accelerator R&D in the context of the European Strategy for Particle Physics (ESPP) update and highlights the strategic importance of accelerator research and development (R&D). The German Committee of Accelerator Physics (KfB) emphasizes the importance of accelerator technology for both scientific research and industrial applications, highlighting key areas of development, including magnets, RF structures, plasma/laser acceleration, energy recovery linacs, and muon beams. Key themes include the need to maintain Germany's and Europe's leadership in accelerator technology, address a looming skills gap due to retirements and reduced funding leading to fewer support of young talents, integrate sustainability into future accelerator designs, and capitalize on the broader applications of accelerator technology in areas ranging from semiconductor manufacturing to cancer treatment.
The document emphasizes the importance of large-scale accelerator projects in attracting and training the next generation of experts. The wider demand for accelerators and their performance will certainly keep growing, which requires strategic investment in accelerator R&D and education of a skilled workforce. CERN, Europe' s leading laboratory for particle accelerators, must strengthen in any case R&D efforts in accelerator-related technologies.

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