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Estonian national input to the ESPP

The Estonian high-energy physics community, represented by the Estonian CERN Science Consortium, discussed potential candidates for CERN's next flagship experiment and reached the following conclusions.
Our first choice is the Future Circular Collider (FCC). The FCC offers the most compelling physics potential, with electron-electron (ee), electron-proton (ep), and proton-proton (pp) collision options, enabling comprehensive tests of the Standard Model and exploration of new physics beyond it. The FCC stands out as the only collider with mature underlying technology. Additionally, the required detector technologies are already under development through the ECFA DRD programs. Its timeline is the shortest among the proposed alternatives, and its cost is well-defined with high certainty. The FCC is particularly favored by young researchers, as it provides a clear and promising career path.
Our second choice is a linear collider. While its technology is not as mature as that of the FCC, it holds significant potential for advancing high-energy physics on the international stage. If the problems with muon cooling will be solved, any collider with a muon-muon collision option would advance our science to unprobed territories. If any collider, dark matter detector, or other experiment discovers a new, unexpected particle, CERN's high-energy physics program must be adapted accordingly to align with these new scientific realities.

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