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Prospects of time-of-flight particle identification at the future Higgs factories

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One of the important aspects of the future Higgs factory is particle identification, which is important for precision measurements and plays a crucial role for flavour physics. Recent technology developments of Si sensors, e.g. LGADs, enable time resolutions below 50 ps. This allows to use measurement of the time-of-flight as a tool for particle identification of π^{\pm} , K^{\pm} and p up to roughly 5 GeV momentum. Time-of-flight particle identification serves as a great complementary tool for dE/dx in gaseous detectors and the only available particle identification tool in fully Si detector designs. In this talk we will discuss the latest developments of the time-of-flight particle identification tool, its physics applications at the future Higgs factory and the potential impact on the detector design using International Large Detector (ILD) at the International Linear Collider (ILC) as an example case.

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