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Charged Hadron Identification with dE/dx and Time-of-Flight at Future Higgs Factories

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The design of detector concepts has been driven for a long time by requirements on transverse momentum, impact parameter and jet energy resolutions, as well as hermeticity. Only rather recently it has been realised that the ability to idenfity different types of charged hadrons, in particular kaons and protons, could have important applications at Higgs factories, ranging from improvements in tracking, vertexing and flavour tagging to measurements requiring strangeness-tagging. While detector concepts with gaseous tracking can exploit the specific energy loss, all-silicon-based detectors have to rely on fast timing layers in front of or in the first layers of their electromagnetic calorimeters. This presentation will review the different options for realising kaon and proton identification, introduce recently developed reconstruction algorithms and present full detector simulation prospects for physics applications using the example of the ILD detector concept.

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