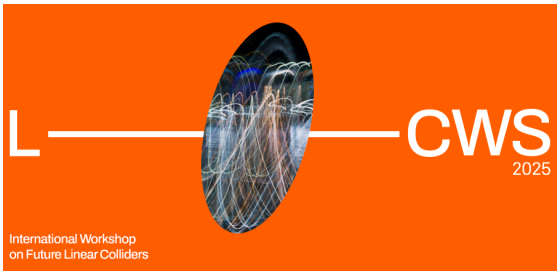

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$e^+e^- \to s\bar{s}$ at $\sqrt{s} = 250$ GeV in future linear colliders

Thursday 23 October 2025 09:20 (20 minutes)

Future Higgs Factories will offer a clean environment to study $e^+e^- \to q\bar{q}$ processes ($q = s, c, b, t$) at various centre-of-mass energies, from the Z-pole up to the TeV scale. In this contribution, we focus on the case of $e^+e^- \to s\bar{s}$ at $\sqrt{s} = 250$ GeV, using full simulation and reconstruction within the ILD detector concept to evaluate differential observables and their sensitivity to detector performance.

We explore event preselection strategies to suppress backgrounds (such as ZZ, ZH, and W^-W^+), and explore different jet clustering algorithms and flavour tagging tools. Particle identification using dE/dx is crucial for identifying charged kaons, which plays a key role in both strange-jet tagging and the reconstruction of the jet charge. We study the performance of the standard ILD flavour tagging package, LCFIPlus, and investigate the impact of more recent developments based on Particle Transformer models. Finally, we discuss how these results can enhance the sensitivity to possible manifestations of physics beyond the Standard Model.

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