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Challenges for tau polarisation measurement

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The unequal coupling of the Z boson to left-handed and right-handed electrons and taus produces the tau polarisation asymmetries, Ptau and ApolFB, that are related to the ratios of the effective vector to axial-vector couplings. In the context of the Standard Model, these couplings can in turn be interpreted as a measurement of the effective electroweak mixing angle. The parity violating effects of the neutral weak current as seen in the process e+e- to Z to tau+ tau- were probed with great precision at the four LEP experiments ALEPH, DELPHI, L3, and OPAL. This presentation will review these measurements and try to provide a perspective on the potential and challenges for improving their evaluation at the FCC-ee.

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