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New physics probed with off-Z-pole data

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We fully explore the prospect of using the off Z-pole run at future lepton colliders to probe the new physics (NP) beyond the Standard Model (SM) via dimension-6 four-fermion effective operators. With interference between the dimesion-6 operator and SM diagram contributions to the $e^+e^- \to f\bar{f}$ scattering processes, the NP effects shows up at collision energy off of the Z pole. The Z line shape scan is thus useful not just for the Z mass and width measurements, but also for NP probes. I will discuss the key observable and uncertainties involved in order to reach a realistic prospects for the reach.

Paper info

Primary authors: Prof. GE, Shao-Feng (TDLI-SJTU); QIAN, Zhuoni (Hangzhou Normal University); Prof. RAMSEY-MUSOLF, Michael; ZHOU, Jia

Presenter: QIAN, Zhuoni (Hangzhou Normal University)

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