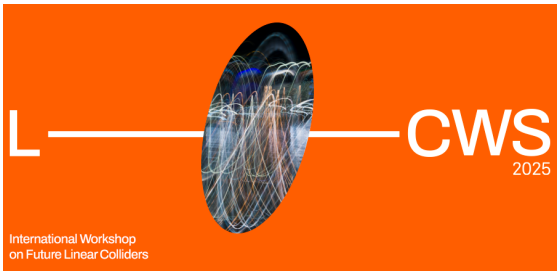

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Decay-mode independent searches for new light scalars at future Higgs factories

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The existence of Higgs-like scalars, which could be produced at electron-positron collider in association with a Z boson, is predicted by many BSM models and, assuming a small coupling to the Z boson, still not excluded by experimental data. Prospects for discovering such an scalar at future Higgs factories have been studied by different methods. The most model-independent one is based on the recoil of the new particle against the Z, since this is independent of the decay modes of the new scalar. Based on this method, searches were performed for any mass of the scalar and for two different decays of the Z boson, to a pair of muons and to a pair of electrons. The combination of the limits obtained by the two Z decay modes was also performed. For detector-level simulations, the study takes the ILD detector concept and ILC parameters at 250 GeV as example. Full simulated background samples were used by the study, while for signal samples the SGV fast simulation, adapted to the ILD, was used for detector simulation and high-level reconstruction.

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