

Probe Light Scalars in 2HDMs at FASER

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Two Higgs Doublet Model (2HDM) offers a prototype for models with an extended Higgs sector beyond that of the Standard Model. It provides a rich spectrum of scalars, some of them can be relatively light with relatively weak couplings. Complementary to the usual searches for extra scalars at high energy colliders, FASER offers a unique opportunity to study those relatively long lived light scalars. Given all the existing theoretical and experimental constraints, we consider the light CP-even and CP-odd scalars in the four different types of 2HDMs, and examine the parameter window which can be probed at FASER.

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