

Abstract Submitted
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Exploring the CP nature of the Higgs within the context of the Type III Two Higgs Doublet Model PETER WINSLOW, UBC/TRIUMF, SEAN TULIN, University of Michigan — We investigate the possibility that the newly discovered boson at the LHC belongs to a set of new bosons originating in a general type III two Higgs doublet model. New sources of CP violation from the scalar potential which mix the electrically neutral scalar and pseudo-scalar states lead to the Higgs acquiring a pseudo-scalar admixture. This mixing is tightly constrained by electric dipole moments, electroweak oblique parameters, and vacuum stability. However, within a small region of parameter space, a sizeable pseudo-scalar admixture cannot be excluded and allows for a large enhancement in the Higgs to di-photon signal rate. We discuss how the LHC Higgs data can provide complementary information in constraining the CP nature of the Higgs boson.

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