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**Constraining Type II 2HDM in Light of LHC Higgs Searches** FELIX KLING, BARADHWAJ COLEPPA, SHUFANG SU, University of Arizona — The discovery of a resonance at 126 GeV with properties consistent with the Standard Model Higgs boson in both the ATLAS and CMS experiments is undoubtedly the most significant experimental triumph of the LHC to date. Though further data would undoubtedly point us in the right direction, at this point it is useful to explore the implication of the current Higgs search results on models beyond the Standard Model. One of the simplest extensions of the Standard Model is the Two Higgs-Doublet Model which contains an additional Higgs Doublet. We study the implication of the LHC Higgs search results on the Type II Two Higgs-Doublet Model. In particular, we explore the scenarios in which the observed 126 GeV Higgs signal is interpreted as either the light CP-even Higgs  $h^0$  or the heavy CP-even Higgs  $H^0$ . Imposing both theoretical and experimental constraints, we analyze the surviving parameter regions. We further identify the regions that could accommodate a 126 GeV Higgs with cross sections consistent with the observed Higgs signal. We also investigate the correlation between different discovery channels.  $\gamma\gamma$  and  $VV$  channels are most likely to be highly correlated with  $\gamma\gamma : VV \sim 1$  for the normalized cross sections.

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