Title: Probing the scalar-pseudoscalar mixing in the 125 GeV Higgs particle with current data

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Abstract: LHC has found hints for a Higgs particle of 125 GeV. We investigate the possibility that such a particle is a mixture of scalar and pseudoscalar states. For definiteness, we concentrate on a two-Higgs doublet model with explicit CP violation and soft Z(2) violation. Including all Higgs production mechanisms, we determine the current constraints obtained by comparing h -> yy with h -> VV*, and comment on the information which can be gained by measurements of h -> b (b) over bar. We find bounds vertical bar s(2)vertical bar less than or similar to 0.83 at one sigma, where vertical bar s(2)vertical bar = 0 (vertical bar s(2)vertical bar = 1) corresponds to a pure scalar (pure pseudoscalar) state.

KeyWords Plus: Electroweak Symmetry-Breaking; Standadr Model; CP Violation; Roots-S=7 Tev; LHC; Boson; Anatomy

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