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Is the standard Higgs just a simple massive field?

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A recent re-analysis of the ATLAS and CMS data indicates a sizeable excess of events in the 4 leptons channel, for a total invariant mass around 700 GeV. Its natural interpretation is in terms of a new scalar boson which decays into ZZ and then into (l+l-)(l+l-) charged final states. I will argue that this picture might have an intriguing relation with the other 125 GeV scalar particle which, so far, has been identified as the fundamental Higgs boson. The relation is based on both numerical and analytical evidence that, in the broken-symmetry phase, the scalar propagator is more complicated than usually expected, as if there were a 2-pole structure. I will show that, in this perspective, the existence of a pair of states, respectively at 125 and 750 GeV, would not be completely unexpected.

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