Title:	Effects of heavy neutrinos on vacuum stability in two-Higgs-doublet model with GUT scale supersymmetry
Authors:	Mummidi, V.S. (/jspui/browse?type=author&value=Mummidi%2C+V.S.) Vishnu, P.K. (/jspui/browse?type=author&value=Vishnu%2C+P.K.) Patel, K.M. (/jspui/browse?type=author&value=Patel%2C+K.M.)
Keywords:	Supersymmetry Phenomenology Dark Matter Higgs Bosons Supersymmetry
Issue Date:	2018
Publisher:	Springer Verlag
Citation:	Journal of High Energy Physics, 2018(8)
Abstract:	We analyse the implications of right-handed neutrinos on the stability of the electroweak vacuum in two-Higgs-doublet models with supersymmetry at high scale. It is assumed that supersymmetry is broken at scale MS = 2 × 1016 GeV and effective theory below MS is two-Higgs-doublet model of type II with three generations of singlet neutrinos which induce small masses for the standard model neutrinos through type I seesaw mechanism. We study the high and low scale versions of seesaw mechanism. In both these cases, we show that the presence of right-handed neutrinos significantly improves the stability of electroweak vacuum if their Yukawa couplings with the SM leptons are of □(1) or greater. However, this possibility is severely constrained by the measured mass and couplings of Higgs and limits on the mass of the charged Higgs from the flavour physics data. It is shown that the stable or metastable electroweak vacuum and experimentally viable low energy scalar spectrum require tan β ≲ 2.5 and the magnitude of neutrino Yukawa couplings smaller than □(1). The results obtained in this case are qualitatively similar to those without right-handed neutrinos.
URI:	https://link.springer.com/article/10.1007/JHEP08(2018)134 (https://link.springer.com/article/10.1007/JHEP08(2018)134) http://hdl.handle.net/123456789/1919 (http://hdl.handle.net/123456789/1919)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
Need to add pdf.odt (/jspui/bitstream/123456789/1919/1/Need%20to%20add%20pdf.odt)		7.99 kB	OpenDocument Text	View/Open (/jspui/bitstream/12345

Show full item record (/jspui/handle/123456789/1919?mode=full)
(/jspui/handle/123456789/1919/statistics)