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Vacuum stability in models with extended Higgs sectors AUGUSTO MEDEIROS DA ROSA, FRANCESC FERRER, Washington University in St. Louis, ROBERTO FRANCESCHINI, CERN — Determining the stability of the Electroweak Vacuum in extensions of the Standard Model is a non-trivial problem already at tree level, for, in renormalizable theories, it requires knowing the full structure of all extrema of a quartic polynomial in a possibly high-dimensional field space. Going beyond lowest order requires adding logarithmic corrections that make the problem numerically more challenging. We study this question within the context of the NMSSM using VeVacious, a tool that performs numerical minimization of the 1-loop effective potential around the tree-level extrema. In particular, we focus on classifying the global minimum structure in the light singlet region considered by Pokorski et al., which can have interesting experimental signatures.

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