

# Bizarreness of Symmetry Energy Behavior in Peculiar Cases of Meson Interactions

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Symmetry energy of nuclear matter is one of the most essential parameters in the field of nuclear astrophysics. There are common types of meson interactions that have been profoundly investigated within RMF framework over recent years ( $\rho - \sigma$  or  $\rho - \omega$ ). In this article, yet another cross-scalar terms of the kind  $\sigma - \delta$  have been introduced. Such cross-couplings may greatly modify the symmetry energy and its slope. Intriguing is that one may obtain desired values of a slope, and thus the values consistent with observations and experimental data, by playing coupling constants of  $\delta$  meson field and a newly adopted  $\sigma - \delta$  meson interactions. Complete research has been performed of wide coupling constant range where most extreme cases may be seen. The results indicate a unique bizarreness of symmetry energy under such distinctive conditions.