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Spontaneous R-symmetry Breaking with Multiple Pseudomoduli

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Abstract:

We examine generalized O'Raifeartaigh models that feature multiple tree-level flat directions and only contain fields with R-charges 0 or 2. We show that spontaneous R-breaking at up to one-loop order is impossible in such theories. Specifically, we prove that the R-symmetric origin of field space is always a local minimum of the one-loop Coleman-Weinberg potential, generalizing an earlier result for the case of a single flat direction. This result has consequences for phenomenology and helps elucidate the behavior of various models of dynamical SUSY breaking.

Author: TSAI, Yuhsin (LEPP, Cornell University)

Co-authors: Dr CURTIN, David (YITP, Stony Brook University); Prof. SHIH, David (NHETC, Rutgers University); Prof. KOMARGODSKI, Zohar (Weizmann Institute of Science)

Presenter: TSAI, Yuhsin (LEPP, Cornell University)

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