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Stability of the electroweak vacuum (Universe) and Cosmic Rays

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The analysis of the stability condition of the electroweak vacuum (and then of our Universe as a whole) is of the greatest importance for our understanding of physics beyond the Standard Model. The possibility that cosmic rays could destabilize the present state of our Universe, and that the cosmic ray induced vacuum decay could be faster than the spontaneous decay has been investigated in the past. It has been recently shown that, contrary to previous expectations, new physics that live at very high energy scales can have a great impact on the stability condition of the Universe. The role of cosmic rays on the stability issue will be considered in the light of these recent results.

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