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Collider phenomenology of Hidden Valley mediators of spin 0 or 1/2 with semivisible jets

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I will provide a general overview of the collider phenomenology of spin 0 or 1/2 mediators with non-trivial gauge numbers under both the Standard Model and a single new confining group. Due to the possibility of many unconventional signatures, the focus is on direct production with semivisible jets. For the mediators to be able to decay, a global U(1) symmetry must be broken. This is best done by introducing a set of operators explicitly violating this symmetry. We find that there is only a finite number of such renormalizable operators and that the phenomenology can be classified into five distinct categories. We show that large regions of the parameter space are already excluded, while others are unconstrained by current search strategies. We also discuss how searches could be modified to better probe these unconstrained regions by exploiting special properties of semivisible jets.

Parallel Session

Electroweak, Top and Higgs Physics

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