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# Extra U(1), effective operators, anomalies and dark matter

*mardi 3 décembre 2013 12:00 (25 minutes)*

In this talk I will present our recent paper with E. Dudas, Y. Mambrini and B. Zaldivar, where we perform a general analysis on the dimension-six operators mixing an almost hidden Z' to the Standard Model (SM), when the Z' communicates with the SM via heavy mediators. These are fermions charged under both Z' and the SM, while all SM fermions are neutral under Z'. We classify the operators as a function of the gauge anomalies behaviour of mediators and explicitly compute the dimension-six operators coupling Z' to gluons, generated at one-loop by chiral but anomaly-free, sets of fermion mediators. We prove that only one operator contribute to the couplings between Z' charged matter and on-shell gluons. We then make a complete phenomenological analysis of the scenario where the lightest fermion charged under Z' is the dark matter candidate. Combining results from WMAP/PLANCK data, mono-jet searches at LHC, and direct/indirect dark matter detections restrict considerably the allowed parameter space.

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