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LHC Constraints on Dark Matter Models with SModelS v3

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We explore the Large Hadron Collider (LHC) constraints on dark matter models (DM) based on a new $\mathrm{U}(1)'$ symmetry. Within this framework, DM production is mediated by a spin-1 or a scalar resonance. We focus on ATLAS and CMS experimental searches for spin-1 resonances with decays to jets, b-jets, top quarks, or DM, and the resonant production of a scalar that decays into a pair of DM particles. Our approach involves integrating these experimental results into the latest version (v3) of the SModelS tool, allowing us to quickly test the two-mediator DM (2MDM) parameter space. SModelS also provides the tools for combining approximately uncorrelated results, which we apply to enhance the LHC sensitivity to the 2MDM.

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