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Simplified dark matter models with a spin-2 mediator at the LHC

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Following the LHC DM working group proposal, a simplified Dark Matter model approach has been widely adopted for the interpretation of LHC Run-II searches. In particular models with s-channel spin-1 and spin-0 mediators have been studied in detail. In this talk I will discuss the LHC phenomenology of the less explored spin-2 mediator scenario, presenting constraints on the model parameter space from the current 13 TeV LHC data. I will show the complementarity among different searches, in particular monojet and multijet plus missing energy searches and resonance searches. For universal couplings of the mediator to standard model particles, dilepton (and diphoton) resonance searches provide the strongest constraints for mediator masses above 200 (500) GeV. Missing energy searches are competitive only in the low-mass region. They can, however, be more important in non-universal coupling scenarios and/or when the coupling of the mediator to dark matter is much larger than its couplings to SM particles.

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