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## Vector Boson Fusion Topology and Simplified Models for Dark Matter searches at colliders

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A possibility to attempt at observing Dark Matter is to produce it at high energy colliders such as the Large Hadron Collider (LHC). LHC proton-proton collisions might result in the production of WIMPs in association with one or more QCD jets, photons as well as other detectable SM debris. Since WIMPs are electrically neutral and cosmologically stable massive particles, they manifest at colliders as missing transverse energy  $E_T$ . We explore prospects for dark matter at the LHC via the VBF topology. Particularly, we focus on scalar and vector-like mediators to look for better constraints on the masses and couplings regarding those previously found via the mono-jet strategy.

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