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Search for supersymmetry with the vector boson fusion topology in proton-proton collisions at $\sqrt{s} = 8$ TeV

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The Vector Boson Fusion (VBF) topology offers a promising avenue for the study of electroweak sector of supersymmetry. The first search for supersymmetry with VBF topology is presented using $19.7 fb^{-1}$ of pp collision data at $\sqrt{s} = 8$ TeV collected with the CMS detector. The search targets the final states with at least two leptons, large missing transverse momentum, and two jets with a large separation in rapidity. The observed dijet invariant mass spectrum after the final selections is found to be consistent with the expected standard model predictions, hence the upper limits are set for the production of charginos and neutralinos with two associated jets, assuming the supersymmetric partner of the τ lepton to be the lightest slepton and the lightest slepton to be lighter than the charginos.

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