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**Search for supersymmetry in pp collisions at  $\sqrt{s} = 13$  TeV in the single-lepton final state using the sum of masses of large-radius jets**  
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— Results are presented from a search for supersymmetric particles in pp collisions in the final state with a single, high  $p_T$  lepton; multiple jets, including at least one b-tagged jet; and large missing transverse momentum. The data sample corresponds to  $2.1 \text{ fb}^{-1}$  recorded by the CMS experiment at  $\sqrt{s} = 13$  TeV. The search focuses on processes leading to high jet multiplicities, such as the simplified model T1tttt corresponding to  $gg \rightarrow \tilde{g}\tilde{g}$  with  $\tilde{g} \rightarrow t\bar{t}\tilde{\chi}_1^0$ . The quantity  $M_J$ , defined as the sum of the masses of the large-radius jets in the event, is used along with other kinematic variables to provide discrimination between signal and backgrounds and as a key part of the background estimation method. The observed event yields in data are consistent with those expected for standard model backgrounds. Gluinos with mass below 1575 GeV are excluded at 95% CL for T1tttt scenarios with low  $\tilde{\chi}_1^0$  mass.

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