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Search for Anomalous Production of Multilepton Events and *R*-Parity-Violating Supersymmetry in  $\sqrt{s} = 7$  TeV pp Collisions<sup>1</sup> EMMANUEL CONTRERAS-CAMPANA, RICHARD GRAY, SUNIL SOMAL-WAR, AMITABH LATH, SCOTT THOMAS, JOHN PAUL CHOU, MATTHEW WALKER, SANJAY ARORA, SHRUTI PANWALKAR, PETER THOMASSEN, PATRICK ZYWICKI, MICHAEL PARK, KIN CHAN, KELVIN MEI, ERIC WILLIAMS, Rutgers, The State University of New Jersey-New Brunswick, CMS COLLABORATION — We present a search for anomalous production of events with three or more isolated leptons produced in pp collisions at  $\sqrt{s} = 7$  TeV collected by the CMS experiment at the LHC. We analyze  $4.7 fb^{-1}$  of data collected by the CMS experiment during the 2011 LHC run. The search is applicable to any model of new physics that produces multiple leptons in the final state. We categorize observed multilepton events into exclusive search channels based on the identity and kinematics of the objects in the events. The channels are then ordered by the amount of expected standard-model background. We emphasize a data-based estimation of the standard-model backgrounds but also use simulation to estimate some of the backgrounds when appropriate. We interpret search results in the context of R-parity-violating models, for which the presence of missing transverse energy is not guaranteed due to the absence of stable supersymmetric particles. We derive exclusion limits as a function of squark and gluino masses for several *R*-parity-violating couplings.

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