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Search for dark matter produced in association with a leptonically decaying Z boson with the CMS Experriment at the LHC

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A search for dark matter particles is performed using events with a Z boson candidate and large missing transverse momentum. The analysis is based on proton-proton collision data at a center-of-mass energy of 13 TeV, collected by the CMS experiment at the LHC in 2016-2018, corresponding to an integrated luminosity of 137 fb^{-1}. The search uses the decay channels $Z \to ee$ and $Z \to \mu\mu$. No significant excess of events is observed over the background expected from the standard model. Limits are set on dark matter particle production in the context of simplified models with vector, axial-vector, scalar, and pseudoscalar mediators, as well as on a two-Higgs-doublet model with an additional pseudoscalar mediator. The results of preparation for RUN3 analysis are also discussed.

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