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Investigation of Mo-100 two-neutrino double beta decay in NEMO-3

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The full data set of the NEMO-3 experiment has been used to measure the half-life of the two-neutrino double beta decay of ^{100}Mo to the ground state of ^{100}Ru, $T_{1/2} = \left[6.81 \pm 0.01\ (\text{stat})^{+0.38}_{-0.40}\ (\text{syst})\right] \times 10^{18}$ y. Clear evidence for the Single State Dominance model is found for this nuclear transition. Limits on Majoron emitting neutrinoless double beta decay modes with spectral indices of n = 2, 3, 7, as well as constraints on Lorentz invariance violation and on the bosonic neutrino contribution to the two-neutrino double beta decay mode are obtained.

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