

Abstract Submitted  
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**Testing new designs for the MAJORANA DEMONSTRATOR's low-mass front-end board** CHIARA SALEMI, University of North Carolina, Chapel Hill, MAJORANA COLLABORATION — The MAJORANA DEMONSTRATOR is searching for neutrinoless double-beta decay in  $^{76}\text{Ge}$  p-type point contact (PPC) detectors in order to determine if a neutrino is its own antiparticle and to probe the absolute neutrino mass scale. Finding this rare decay would also show that lepton number is not conserved. The search is made possible by the novel high-purity Ge PPC detector technology, which allows a low energy threshold and excellent energy resolution. Rare event searches with such sensitive detectors require extremely low radioactive backgrounds, and the front-end electronics, located inside the shielding, are one of the primary sources of background events in the signal region. For this reason, the front-end board is made to be low-mass and of radio-pure materials. A new design that is being studied could potentially in the future replace the board's fused silica substrate with a copper back plane coated in parylene, two materials whose assay results show low radioactivity. In addition to decreasing the overall radioactivity of the board, the new design reduces the amount of material near the detectors. Preliminary testing shows that the new design also substantially decreases the intrinsic electronic noise of the signal amplification circuitry.

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