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CoGeNT-4: Prospects for an expanded search for light-mass WIMPS JOHN ORRELL, CRAIG AALSETH, Pacific Northwest National Laboratory, JUAN COLLAR, University of Chicago, TONY DAY, Pacific Northwest National Laboratory, NICOLE FIELDS, University of Chicago, ERIN FULLER, TODD HOSSBACH, MARTY KEILLOR, DICK KOUZES, CORY OVERMAN, BRENT VANDEVENDER, Pacific Northwest National Laboratory — The CoGeNT experiment located at the Soudan Underground Laboratory has reported an excess of events below an electron scattering equivalent of 1 keV. This result may be interpreted alternatively as either an unidentified background contribution or a signature of light-mass (5-10 GeV/c2) weakly interacting massive particle (WIMP) dark matter. The initial CoGeNT results were produced using a single 440 gram high-purity germanium radiation detector operated at liquid nitrogen temperature. To further test these unexpected results, an expanded CoGeNT-4 experimental design is under development. The shield design concept is presented and the science impact of a four-detector experiment is explored. Of particular interest is the sensitivity to a hypothesis for light-mass WIMP dark matter particles in the 5-10 GeV/c2 mass range that could potentially explain the initial CoGeNT results as well as the results of the DAMA/LIBRA experiment.

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