Low Energy Background Modeling for LEGEND-1000[1] JACKSON WATERS, University of North Carolina at Chapel Hill, LEGEND COLLABORATION — The LEGEND-1000 experiment will search for neutrinoless double beta decay ($0\nu\beta\beta$) in ^{76}Ge with 1000 kg total of high-purity Germanium (HPGe) detectors and a background goal of < 0.03 cts / (FWHM-t-yr). It will utilize technologies from the current MAJORANA and GERDA experiments, along with those from its upcoming first phase LEGEND-200, to achieve a discovery potential at a half-life exceeding 10^{28} years. Due to the low background, keV-level energy thresholds, and improved detector technology, a low energy, beyond the Standard Model (BSM) physics program is possible in parallel with $0\nu\beta\beta$ studies. In order to look for BSM physics at low energies, a systematic study of all backgrounds below 100 keV has to be performed. This talk will discuss the various backgrounds considered, and results from Monte Carlo simulations will be shown.

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