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Surface alpha backgrounds from plate-out of radon progeny GOPAKUMAR PERUMPILLY, VINCENTE GUISEPPE, University of South Dakota, MAJORANA COLLABORATION — Low-background detectors operating underground aim for unprecedented low levels of radioactive backgrounds. Although the radioactive decays of airborne radon (particularly Rn-222) and its subsequent daughters present in an experiment are potential backgrounds, more troublesome is the deposition of radon daughters on detector materials. Exposure to radon at any stage of assembly of an experiment can result in surface contamination by daughters supported by the long half life (22 y) of Pb-210 on sensitive locations of a detector. We have developed a model of the radon progeny implantation using Geant4 simulations based on the low energy nuclear recoil process. We explore the alpha decays from implanted progeny on a Ge crystal as potential backgrounds for a neutrinoless double-beta decay experiment. Results of the simulations validated with alpha spectrum measurement of plate-out samples will be presented.

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