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Radiopurity Screening and Radiological Simulation for DUNE

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The design of the far detector of the Deep Underground Neutrino Experiment (DUNE) consists of four 10 kton supermodules, each filled with liquid Argon and to be located underground at SURF/SD. Radiological backgrounds are mostly relevant for the low-energy physics of DUNE, such as supernova neutrinos. Radiopurity requirements are driven by the intrinsic Ar-39 contamination of about 1 Bq/kg for undepleted liquid argon. The long electron drift length of about 3.5 m inside each time projection chamber, as well as the one sided light collection, complicate further the impact of radiological backgrounds from detector materials. The radiopurity screening of detector materials will be discussed and how the results enter a comprehensive radiological simulation using LArSoft.

Additionally, LArSoft improvements to the usability of the photon simulation are presented.

Primary author: STOCK, Jason (South Dakota School of Mines and Technology)

Co-author: REICHENBACHER, Juergen (South Dakota School of Mines and Technology)

Presenter: STOCK, Jason (South Dakota School of Mines and Technology)

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