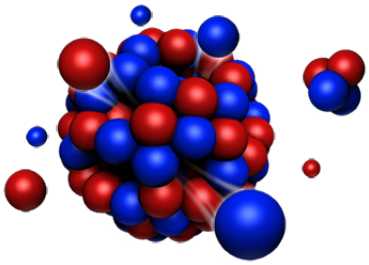

Contribution ID: **119** Type: **Oral Presentation**

Flight Path Shielding Study with the Next-Generation Lujan Target-Moderator-Reflector-Shield Assembly

Thursday, 17 October 2019 14:00 (30 minutes)

The next-generation Lujan Target-Moderator-Reflector-Shield assembly (Mark-4 design) is currently being fabricated and is scheduled for installation during the upcoming extended outage period in Spring of 2020. The new design will offer significantly changed neutronic performance for the four upper-tier flight paths (FPs). The neutronic performance for the remaining lower-tier flight paths remains principally unchanged. For more details regarding the proposed physics design performance see Ref. [1]. The upper-tier flight paths will be viewing a thin spallation target surrounded by a water moderator resulting in higher fast neutron flux and improved energy resolution available for nuclear physics experiments. The changes in the neutronic performance for upper-tier flight paths require us to study the efficacy of the shielding package for the affected FPs. In this paper we will introduce the layout of the upper-tier FPs in the current configuration at Lujan Center at LANSCE. We will describe the detailed 3-D geometry implemented in MCNPX [2] and discuss the early results.

References:
[1] L. Zavorka et al., Nucl. Instr. and Meth. A, 901 (2018) pp 189-197
[2] MCNPX user's manual, D. B. Pelowitz editor, LA-CP-07-1473

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Session Classification: Target

Track Classification: Target/Moderator