

## 8th High Power Targetry Workshop (HPTW2023)



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# Lujan Center 1L Target TMRS Mark IV Upper Target Design and Thermal Hydraulic Analysis

*Wednesday, 8 November 2023 11:45 (15 minutes)*

Commissioning of the Los Alamos Neutron Science Center (LANSCE) Mark IV Target-Moderator-Reflector System (TMRS) neutron source at the Lujan Center took place during the 2022 run cycle. The Mark IV is comprised of three target stations. A new upper target has been designed to accommodate and enhance the changing experimental needs. While the middle and lower target stations had minimal to no substantial modifications in Mark IV. The main goals of the replacement target, Mark IV, are to improve target performance for nuclear science research while preserving the thermal- and cold-neutron performance for material science. The two-tiered nature of the 1L target and associated beam lines naturally lends itself to this dual mission. The resulting design offers significant improvements in both the resolution and the intensity of medium energy neutrons (keV-MeV) in the upper tier, while preserving the thermal- and cold-neutron performance in the lower tier. Computational models have been developed to simulate the thermal hydraulic performance of the LANSCE TMRS Mark IV Upper Target assembly by coupling particle transport to calculate energy deposition for thermal hydraulic calculations.

## Themes for the contribution

4 Target design, analysis, and validation of concepts:

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