

Abstract Submitted  
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**Machine learning-based profile prediction in the Large Plasma Device**<sup>1</sup> PHIL TRAVIS, TROY CARTER, JACOB BORTNIK, University of California, Los Angeles — The Large Plasma Device (LAPD) currently does not have single-shot radial profile or particle transport measurements, but this information can now be predicted using a machine learning-based method. Providing accurate, single-shot transport and profile information could provide greater insight and control of all experiments conducted in the LAPD. Predictions of temperature, density, and plasma potential profiles as well as other transport-relevant quantities are produced by a neural network-based model. This model makes predictions by analyzing results from a theoretical model of particle transport [1], data from diagnostics (such as line-averaged density and fast camera frames), and information on machine state (such as fill pressure and discharge current). Results of this predictive model will be presented with comments on its accuracy and robustness. [1] J. E. Maggs, T. A. Carter, and R. J. Taylor, *Phys. Plasmas* 14, 052507 (2007).

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