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Learning Trends in Reaction Cross-Section Evaluations Using Generative Machine Learning JORDAN FOX, San Diego State Univ, KYLE WENDT, Lawrence Livermore National Lab — Machine learning methods are used to analyze systematic trends in nuclear reaction cross section evaluations over the nuclear landscape. We employ a system of multiple generative adversarial neural networks to learn how a cross section changes when proton- and/or neutron-number change. We first apply this to a toy problem using a lattice of Gaussian functions; then the system, having learned from the whole lattice, can identify functions with artificial defects. Given this proof-of-concept, we apply a similar method to one channel of the TENDL data set, where a handful of defects do exist, and the system is used to identify areas of the chart that may need attention. This work is the foundation for a larger system that can incorporate correlations between reaction channels and enhance our understanding of trends in reaction data. Supported in part by LLNL under DOE Contract DE-AC52-07NA27344 and DOE Grant DE-FG02-03ER4127.

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