Use of machine learning techniques for analysis of plasma data
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PHREY, Princeton Plasma Physics Laboratory — We consider the application of
machine learning techniques to results from gyrokinetic (GK) codes such as Gene [1].
GK codes allow accurate computation of physical quantities such as radial fluxes,
potential fluctuations, etc. However, such codes are computationally expensive, so
use of techniques (eg, neural networks) to reduce the number of simulations nec-
essary is desirable. Strategies are considered to minimize the requisite number of
training examples for such a network without risk of error due to underfitting or
overfitting.

[1] F. Jenko, W. Dorland, M. Kotschenreuther, B.N. Rogers, Phys. Plasmas <7>,
1904 (2000).

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