Abstract Submitted
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Physics-Informed Neural Networks for Solving PDEs in Plasma Physics NICK MCGREIVY, Princeton University — Physics Informed Neural Networks (PINNs) [1] have been recently introduced as a means of solving PDEs, where the solution is represented by a neural network. Partial derivatives are calculated using automatic differentiation, allowing the neural network to find the solution to the PDE without ever discretizing the solution space. Here, a PINN is used to solve a number of problems in plasma physics, thereby illustrating the strengths and weaknesses of this approach. [1] M. Raissi, P. Perdikaris, and G. E. Karniadakis. Physics informed deep learning (part I): Data-driven solutions of nonlinear partial differential equations. CoRR, abs/1711.10561, 2017.

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