

cases	doc_1		doc_2		decision	id
	authors	<ul style="list-style-type: none">LÃ©o BoisEmmanuel FranckLaurent NavoretVincent Vigon	authors	<ul style="list-style-type: none">Leo BoisE. FranckL. NavoretVincent Vigon	DUPLICATES	69
	title	A neural network closure for the Euler-Poisson system based on kinetic simulations	title	A neural network closure for the Euler-Poisson system based on kinetic simulations		
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	id	id7572586374018655874	id	id2216458874807446131		
	abstract	This work deals with the modeling of plasmas, which are charged-particle fluids. Thanks to machine leaning, we construct a closure for the one-dimensional Euler-Poisson system valid for a wide range of collision regimes. This closure, based on a fully convolutional neural network called V-net, takes as input the whole spatial density, mean velocity and temperature and predicts as output the whole heat flux. It is learned from data coming from kinetic simulations of the Vlasov-Poisson equations. Data generation and preprocessings are designed to ensure an almost uniform accuracy over the chosen range of Knudsen numbers (which parametrize collision regimes). Finally, several numerical tests are carried out to assess validity and flexibility of the whole pipeline.	abstract	This work deals with the modeling of plasmas, which are charged-particle fluids. Thanks to machine leaning, we construct a closure for the one-dimensional Euler-Poisson system valid for a wide range of collision regimes. This closure, based on a fully convolutional neural network called V-net, takes as input the whole spatial density, mean velocity and temperature and predicts as output the whole heat flux. It is learned from data coming from kinetic simulations of the Vlasov-Poisson equations. Data generation and preprocessings are designed to ensure an almost uniform accuracy over the chosen range of Knudsen numbers (which parametrize collision regimes). Finally, several numerical tests are carried out to assess validity and flexibility of the whole pipeline.		
	versions		versions			