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	authors	• LÃ©o Bois • Emmanuel Franck • Laurent Navoret • Vincent Vigon	**authors**	• Bois, Leo • Franck, Emmanuel • Navoret, Laurent • Vigon, Vincent	DUPLICATES	225
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	abstract	This work deals with the modeling of plasmas, which are ionized gases. Thanks to machine learning, we construct a closure for the one-dimensional Euler-Poisson system valid for a wide range of collisional 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 collisional 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**			