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Gunther Uhlmann and **Yiran Wang*** (yiran.wang@emory.edu), 400 Dowman Drive, Atlanta, GA. *Convolutional neural network for solving inverse problems of nonlinear wave equations.*

We study inverse problems of determining coefficients of nonlinear wave equations from the machine learning point of view. Based on the understanding of propagation of waves, especially the nonlinear interactions, we construct a convolutional neural network in which the parameters are used to classify and reconstruct the coefficients of nonlinear wave equations. We also discuss the depth and number of units of the network and their quantitative dependence on the complexity of the medium structure. The talk is based on a joint work with G. Uhlmann. (Received August 27, 2021)