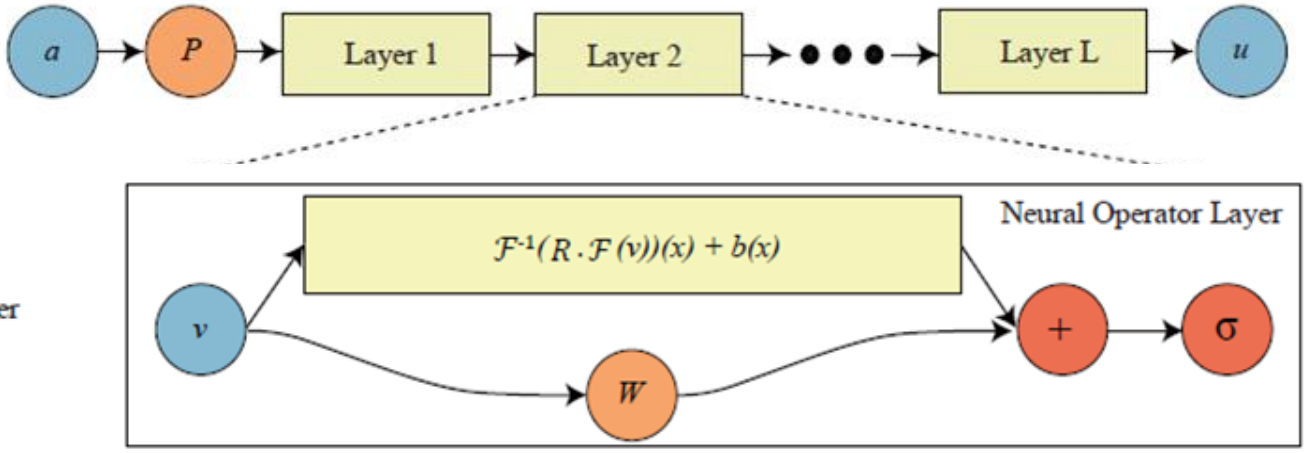
Fourier Neural Operator Learning of Acoustic Metamaterial Displacement Fields

Han Zhang, L. Catherine Brinson

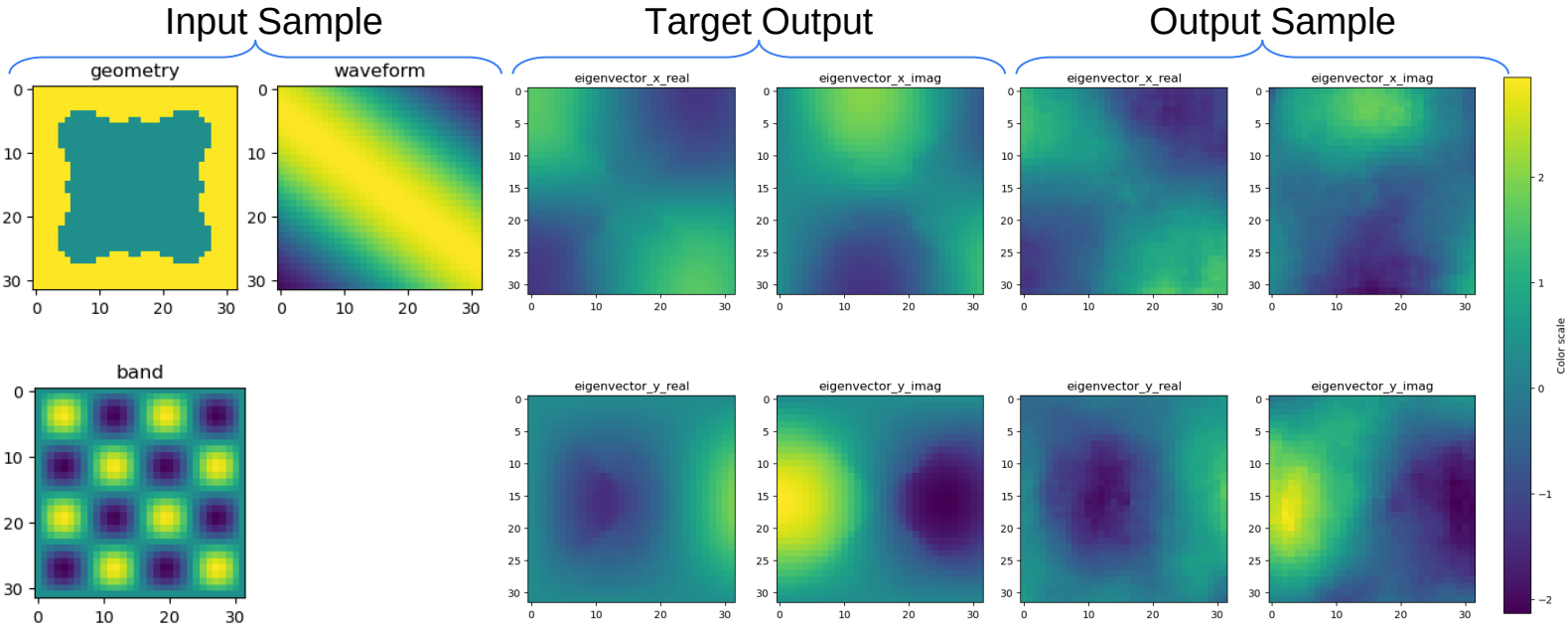
Purpose & Motivation

- Neural networks usually fail to generalize past its trained representation of data.
- Neural operators attempt to make AI robust against resolution changes in representation of data, by mapping a discrete representation space to a continuous function space.



Training & Results

- FNO trained on $\sim 10^5$ samples, with sample inputs having 3 panes of information denoting the metamaterial geometry, the acoustic wave, and the deformation mode or dispersion band of interest.
- FNO outputs are the real and imaginary x and y displacement fields.



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