

- The possible space of a physical system scales exponentially with the number of elements
- One solution is to define systems in terms of objects and relations like particles and forces
- To learn these systems we introduce a bias for objects and relation representations
- This takes the form of graph networks which encode objects as nodes in the graph and relations as edges.
- The global constants are learned and encoded in the global update function.
- The network learned to make predictions on seven simulated systems and one real world system
- The network has no initial knowledge of the physical laws of the system but learns to approximate them by observing the objects and relations.
- GN based models are most successful when there is commonality between the objects and relations to share.
- Model does not address the compounding factors of errors across long trajectory predictions.

<https://arxiv.org/pdf/1806.01242v1.pdf>