

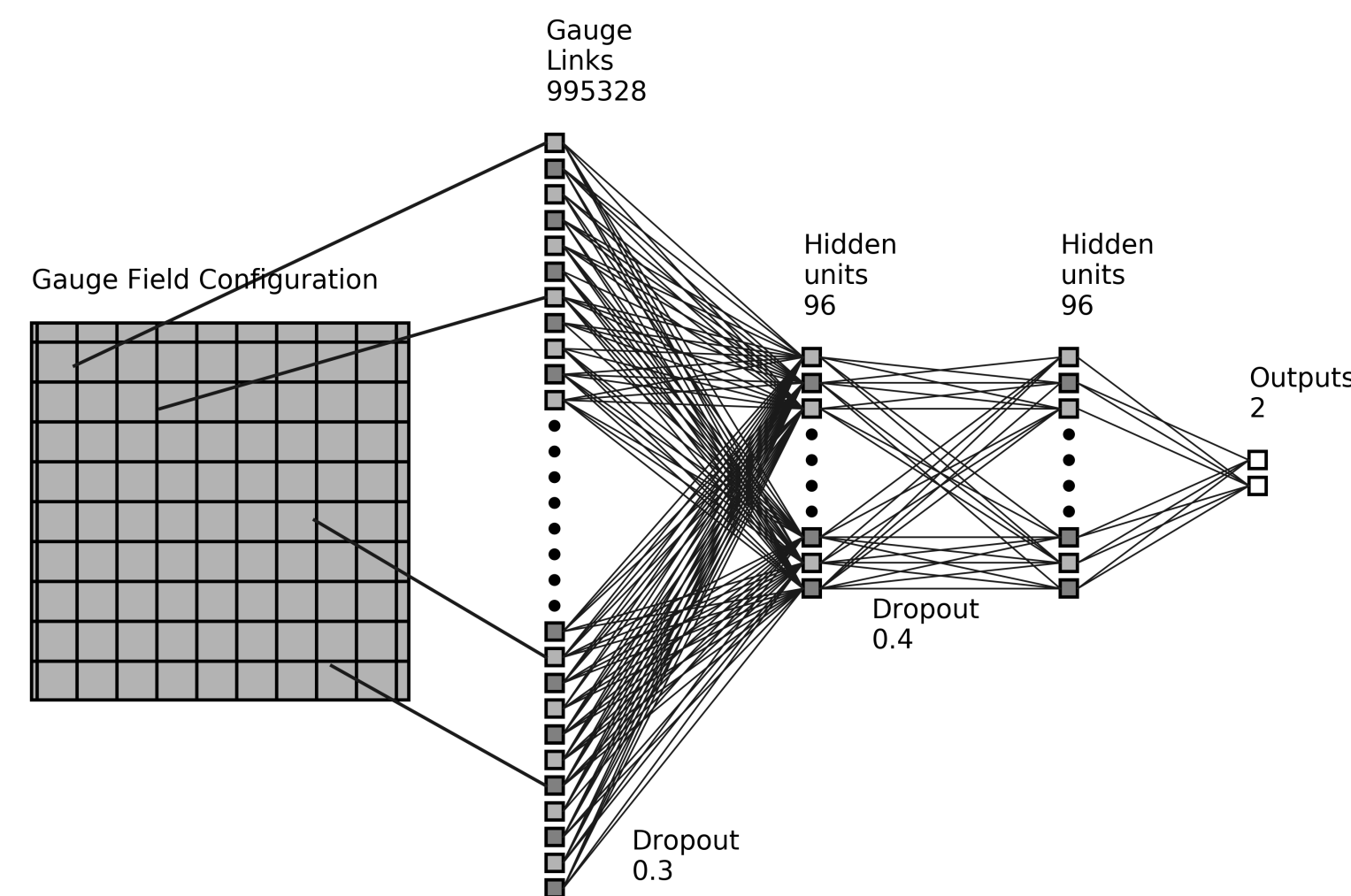
# Machine learning action parameters in LQCD

## Objectives

- Discovery of the properties of hadronic and nuclear matter through world leading Lattice Quantum Chromodynamics (LQCD) calculations
- Accelerate computation of gauge configuration generation
- Reduce regression problem of determining LQCD action parameters

## Impact

- Established symmetry-preserving deep neural network able to accurately identify parameters used to generate streams of ensembles
- Enabled future class of methods to reduce parameter space searches



## Accomplishments

- Established symmetry-preserving deep neural network able to accurately identify parameters used to generate streams of ensembles
- Non-Symmetry preserving networks revealed features manifested from long auto-correlation lengths in ensembles not recognized in standard analyses
- Published P. Shanahan, D. Trewartha, W. Detmold, Phys.Rev.D97(2018) 094506