Contribution ID: **255** Type: **Oral**

Rebuilding Dense Matter EoSs from Neutron Star Observations with Deep Learning

Wednesday 21 August 2024 17:00 (30 minutes)

We present a novel deep learning approach to rebuild the dense matter equation of state (EoS) for probing neutron star observables. By leveraging an automatic differentiation framework, our method solves inverse problems and achieves accurate EoS optimization. Through training a neural network on a comprehensive dataset, we develop a predictive EoS model that yields precise relationships between pressure, speed of sound, and mass density. Our results align with conventional approaches and are consistent with the observed tidal deformability from the gravitational wave event, GW170817.

Primary author: Dr WANG, Lingxiao (RIKEN)

Presenter: Dr WANG, Lingxiao (RIKEN)

Session Classification: Statistical Methods for Physics Analysis in the XXI Century

Track Classification: H: Statistical Methods for Physics Analysis in the XXIst Century