

XVth Quark Confinement and the Hadron Spectrum



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Rebuilding Dense Matter EoSs from Neutron Star Observations with Deep Learning

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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.

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