



## Identify QCD transition in heavy-ion collisions with Deep Learning

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Supervised learning with a deep convolutional neural network is used to identify the QCD equation of state (EoS) employed in relativistic hydrodynamic simulations of heavy-ion collisions. The final-state particle spectra  $\rho(p_T, \Phi)$  provide directly accessible information from experiments. High-level correlations of  $\rho(p_T, \Phi)$  learned by the neural network act as an “EoS-meter”, effective in detecting the nature of the QCD transition. The EoS-meter is model independent and insensitive to other simulation input, especially the initial conditions. Thus it provides a formidable direct-connection of heavy-ion collision observable with the bulk properties of QCD.

### List of tracks

QCD phase diagram (BES)

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