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Probing critical fluctuations with deep learning in relativistic heavy-ion collisions

Systems with different interaction Hamiltonian develop the same critical behaviour.
Using this universality, we are able to encode critical fluctuations into
the data of heavy ion collisions.
Weak signals of a few inter-particle correlations hide within a large particle cloud.
The task is as difficult as looking for needles in a haystack.
Employing a point cloud network with dynamical edge convolution, we are able to
identify events with critical fluctuations through supervised learning,
and pick signal particles used for decision-making in each single event.

Topics

Other related physics

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