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Constrained curve fitting with Bayesian neural networks

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Common to many analysis pipelines in lattice field theory is the need to fit data to a model that is determined partially by a finite number of model parameters. Familiar examples include analyses of finite-size scaling and ground state spectroscopy. We propose a Bayesian fit method that utilizes a neural network to approximate the component of such models that is a priori unknown. The viability of our method is tested on a number of finite-size scaling problems with increasing complexity.

Topical area

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