

Continuous simulation of Beyond-Standard-Model processes with multiple parameters

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We present a new approach to simulate Beyond-Standard-Model (BSM) processes which are defined by multiple parameters. In contrast to the traditional grid-scan method where a large number of events are simulated at each point of a sparse grid in the parameter space, this new approach simulates only a few events at each of a selected number of points distributed randomly over the whole parameter space. In subsequent analysis, we rely on the fitting by the Bayesian Neural Network (BNN) technique to obtain accurate estimation of the acceptance distribution. With this new approach, the signal yield can be estimated continuously, while the required number of simulation events is greatly reduced.

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