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## Emulation of high multiplicity NLO k-factors

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Evaluation of one-loop matrix elements is computationally expensive and makes up a large proportion of time during event generation. We present a neural network emulator that builds in the factorisation properties of matrix elements which accurately reproduces the NLO k-factors for electron-positron annihilation into up to 5 jets.

We show that our emulator retains good performance for high multiplicities and that there is a significant speed advantage over more traditional loop provider tools.

### Significance

Previous studies have shown that emulation of one-loop matrix elements is possible but the accuracy drops for higher multiplicities. We show that using the factorisation properties of matrix elements we are able to retain good performance even for 2->5 processes at one-loop.

### References

### Experiment context, if any

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