Quantum Computing and Quantum information from EFTs Measurements

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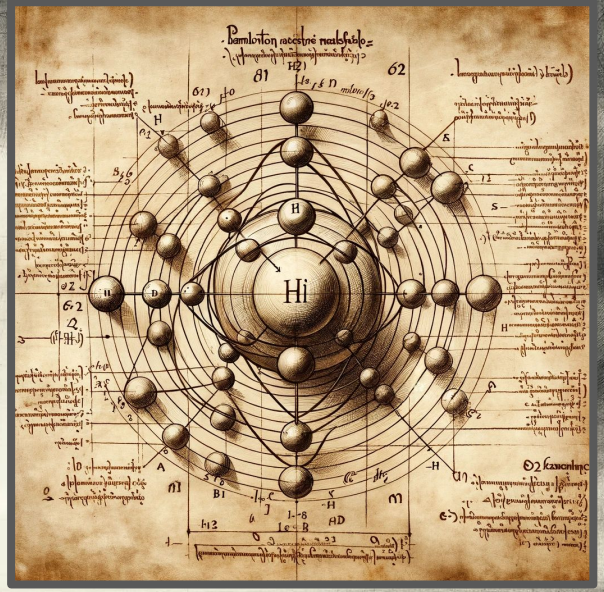
6th General Meeting of the LHC EFT Working Group

November 16th 2023



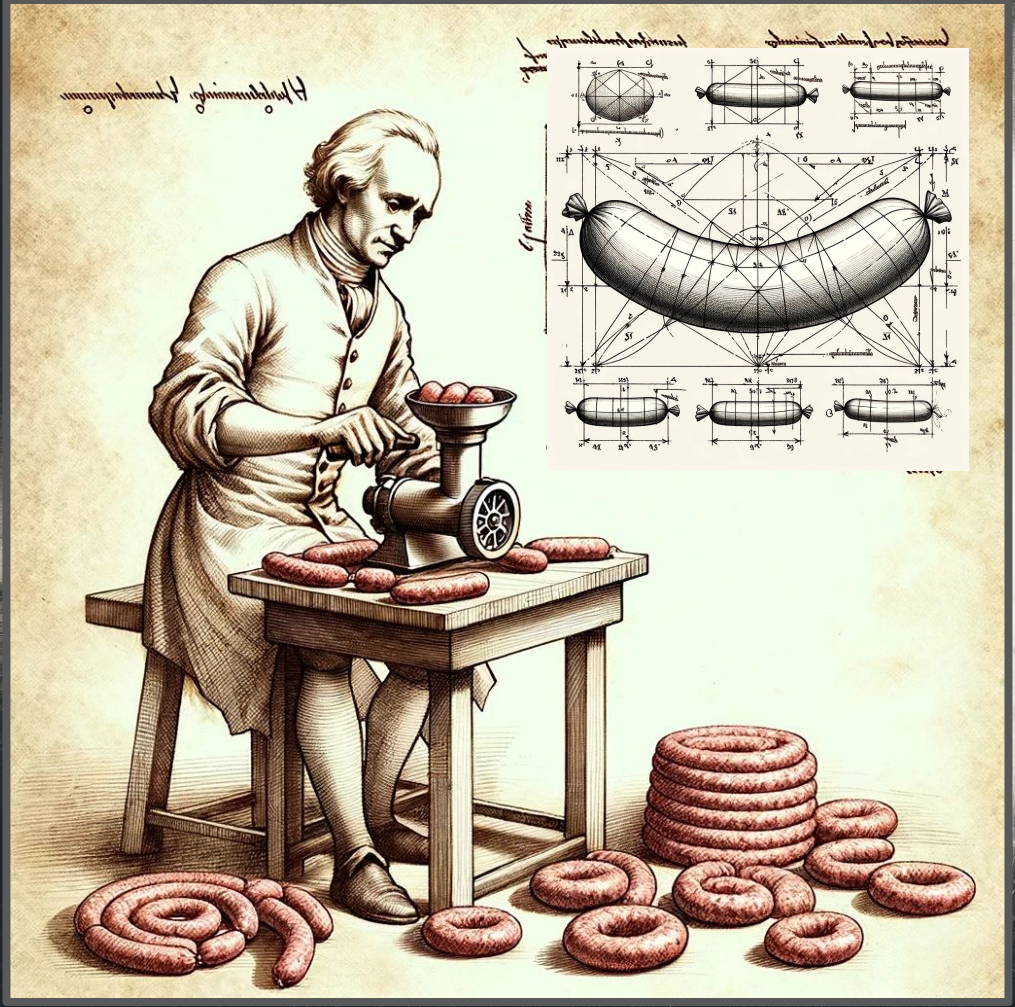
Require: *H linear combination of tensor products of Pauli matrices*

Choose a variational ansatz V(θ)

Choose starting set of values for θ

While do:

- *Prepare the state $|\psi(\theta)\rangle$*
- *From measurements of $|\psi(\theta)\rangle$ in different bases estimate $\langle\psi(\theta)|H|\psi(\theta)\rangle$*
- *Update θ according to minimizer*

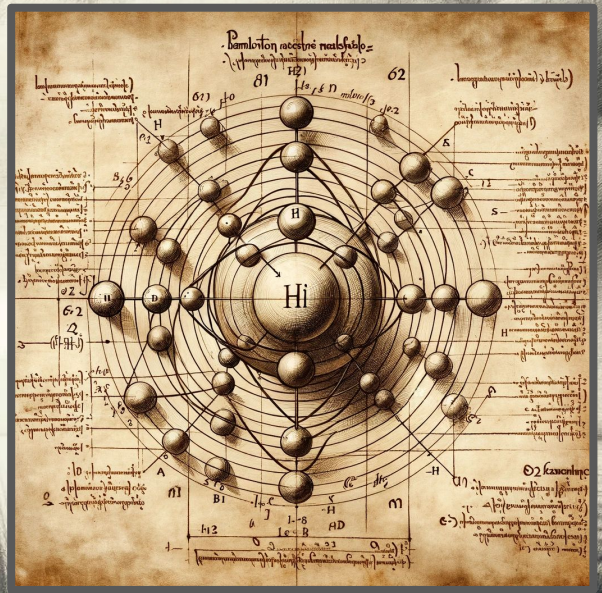


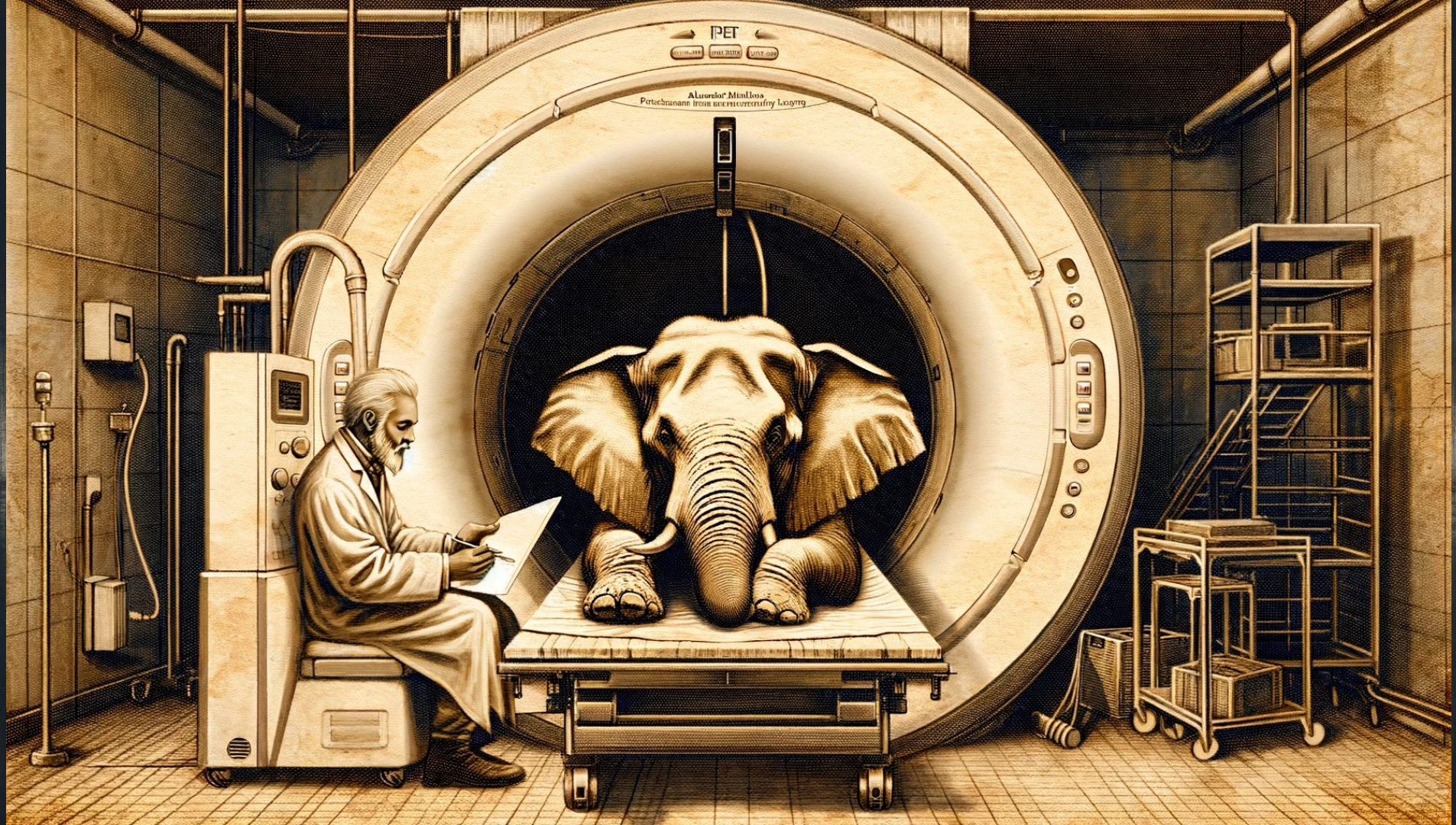
Standard Model of Particle Physics

Simulation Based Inference

Symbolic Regression

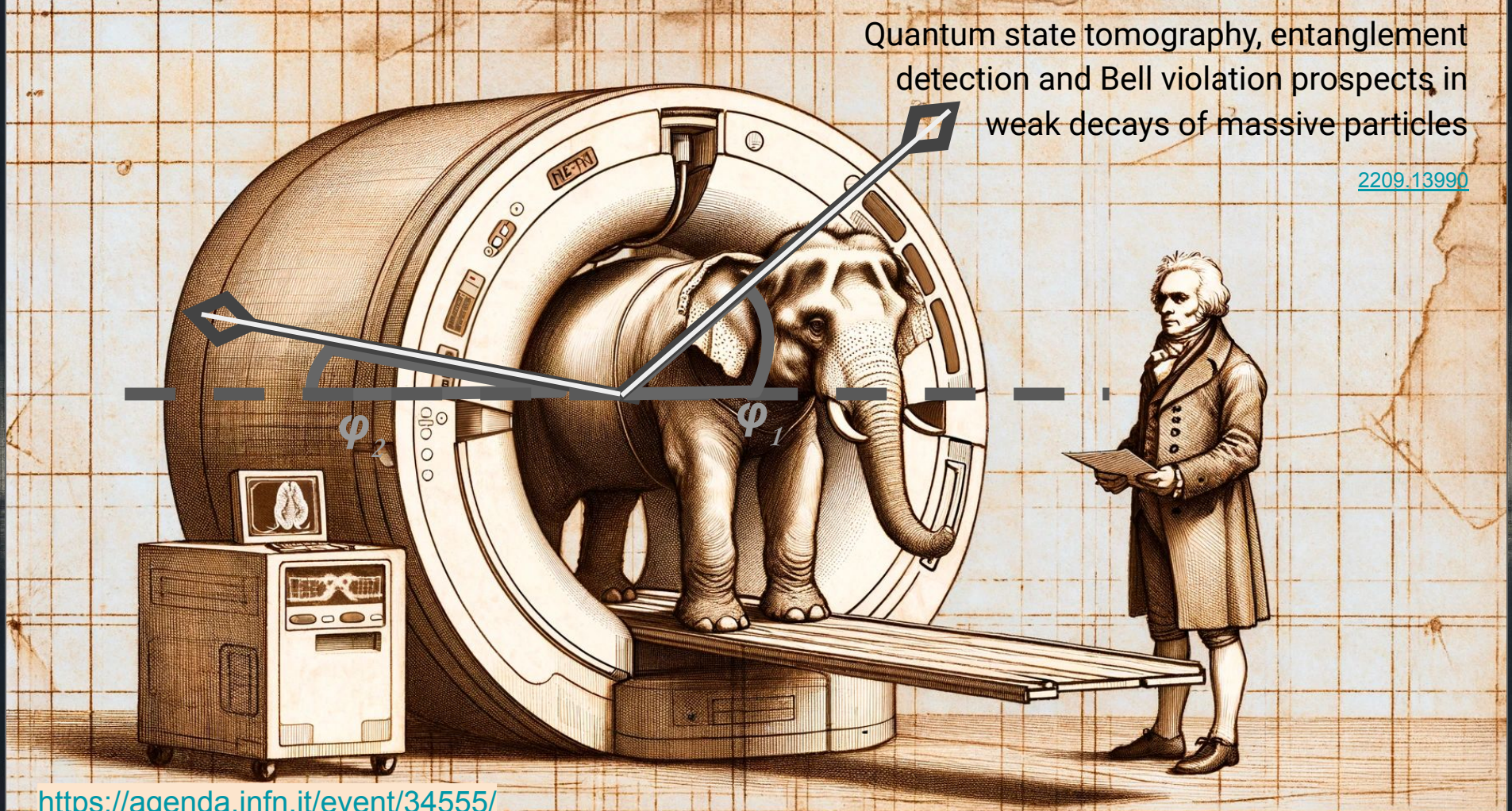
Generative Modelling


Hi

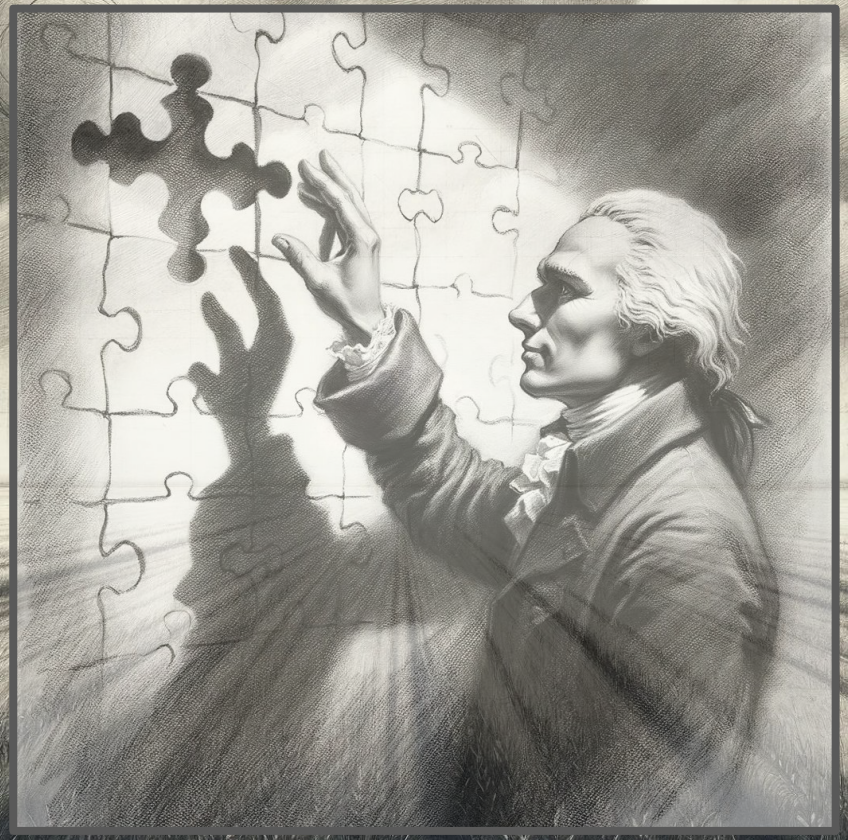

PET

Quantum state tomography, entanglement detection and Bell violation prospects in weak decays of massive particles

2209.13990



https://agenda.infn.it/event/34555/

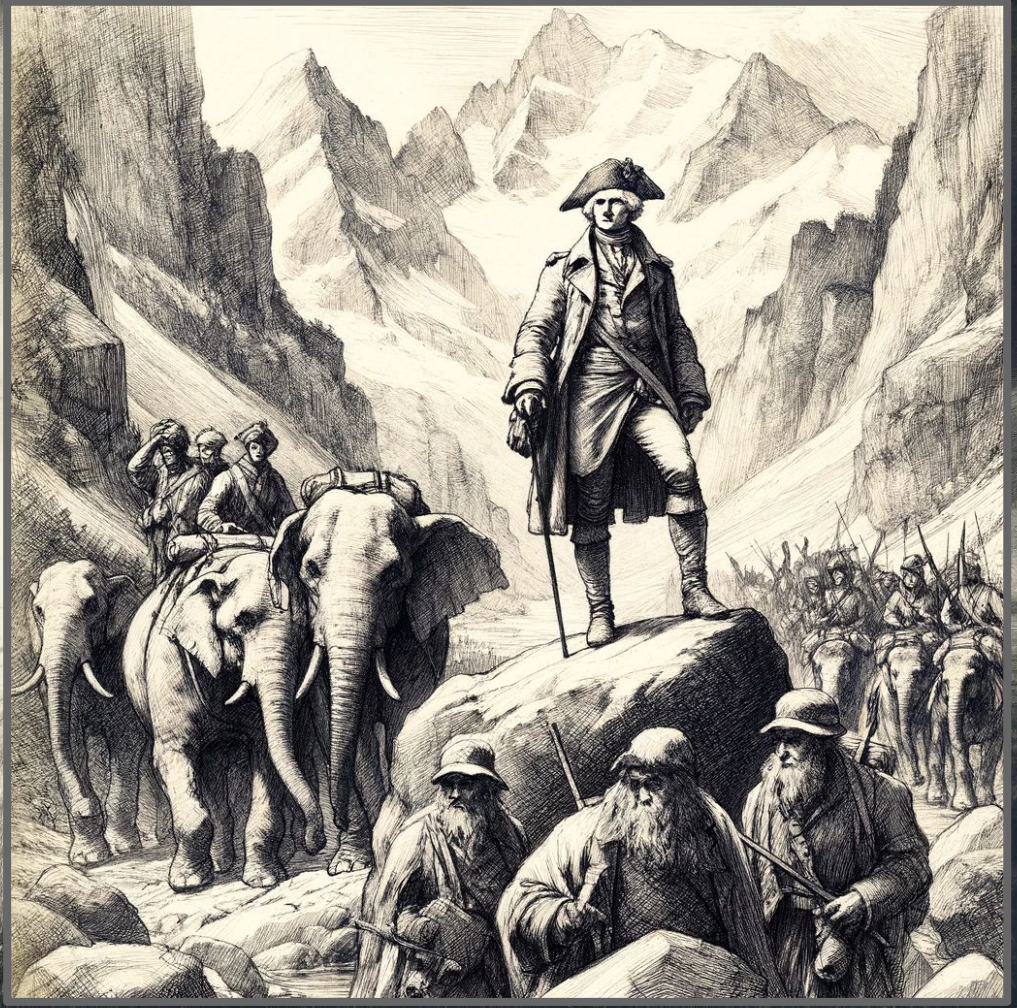


Inductive Bias of symmetries using EQCs

Persistent Homology For the topological encoding of measurements

QCBM for learning correlation structure

Quantum Inspired augmentations for improved n-point correlations in jet modelling.



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