Contribution ID: **7** Type: **not specified**

Deep-Learning Jets with Uncertainties and More

Friday 17 January 2020 09:00 (20 minutes)

Bayesian neural networks allow us to keep track of uncertainties, for example in top tagging, by learning a tagger output together with an error band. We illustrate the main features of Bayesian versions of established deep-learning taggers. We show how they capture statistical uncertainties from finite training samples, systematics related to the jet energy scale, and stability issues through pile-up. Altogether, Bayesian networks offer many new handles to understand and control deep learning at the LHC without introducing a visible prior effect and without compromising the network performance.

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Session Classification: Machine Learning Inference and Interpretation