

Chapitre X

Reconstruction de la masse d'une résonance à l'aide d'un réseau de neurones profond

 Citations incontournables :

- DELPHES 3.4.2 [1, 2]
- PYTHIA 8.235 [3]
- FASTJET [4, 5]
- KERAS [6]
- TENSORFLOW [7]
- [8] for an example of nn use in HEP
- [9]

Références

- [1] J. de FAVEREAU & coll. « DELPHES 3 : a modular framework for fast simulation of a generic collider experiment ». *Journal of High Energy Physics* **2** (fév. 2014). DOI : [10.1007/jhep02\(2014\)057](https://doi.org/10.1007/jhep02(2014)057). URL : [http://dx.doi.org/10.1007/JHEP02\(2014\)057](http://dx.doi.org/10.1007/JHEP02(2014)057).
- [2] A. MERTENS. « New features in DELPHES 3 ». *Journal of Physics : Conference Series* **608.1** (2015). Sous la dir. de L. FIALA, M. LOKAJICEK & N. TUMOVA. DOI : [10.1088/1742-6596/608/1/012045](https://doi.org/10.1088/1742-6596/608/1/012045).
- [3] T. SJÖSTRAND & coll. « An Introduction to PYTHIA 8.2 ». *Computer Physics Communications* **191** (2015), p. 159-177. DOI : [10.1016/j.cpc.2015.01.024](https://doi.org/10.1016/j.cpc.2015.01.024). arXiv : [1410.3012](https://arxiv.org/abs/1410.3012) [hep-ph].
- [4] M. CACCIARI, G. P. SALAM & G. SOYEZ. « FASTJET user manual ». *European Physical Journal* **C72** (nov. 2012), p. 1896. DOI : [10.1140/epjc/s10052-012-1896-2](https://doi.org/10.1140/epjc/s10052-012-1896-2). arXiv : [1111.6097](https://arxiv.org/abs/1111.6097) [hep-ph].
- [5] M. CACCIARI & G. P. SALAM. « Dispelling the N^3 myth for the k_T jet-finder ». *Physics Letters* **B641.1** (sept. 2006), p. 57-61. DOI : [10.1016/j.physletb.2006.08.037](https://doi.org/10.1016/j.physletb.2006.08.037). URL : <http://dx.doi.org/10.1016/j.physletb.2006.08.037>.
- [6] F. CHOLLET & coll. KERAS. <https://keras.io>. 2015.
- [7] M. ABADI & coll. TENSORFLOW : *Large-scale machine learning on heterogeneous distributed systems*. Software available from tensorflow.org. 2015. URL : <https://www.tensorflow.org/>.
- [8] D. GUEST & coll. « Jet flavor classification in high-energy physics with deep neural networks ». *Physical Review* **D94.11** (déc. 2016). DOI : [10.1103/physrevd.94.112002](https://doi.org/10.1103/physrevd.94.112002). URL : <http://dx.doi.org/10.1103/PhysRevD.94.112002>.
- [9] W. SARLE. « Neural Networks and Statistical Models ». 1994.

