

Cloud-Based computational Migration and Discussion of the Higgs Boson Analysis of the ATLAS Experiment in the Decay channel $H \rightarrow WW^* \rightarrow e\nu\mu\nu$ at $\sqrt{s}=13\text{TeV}$



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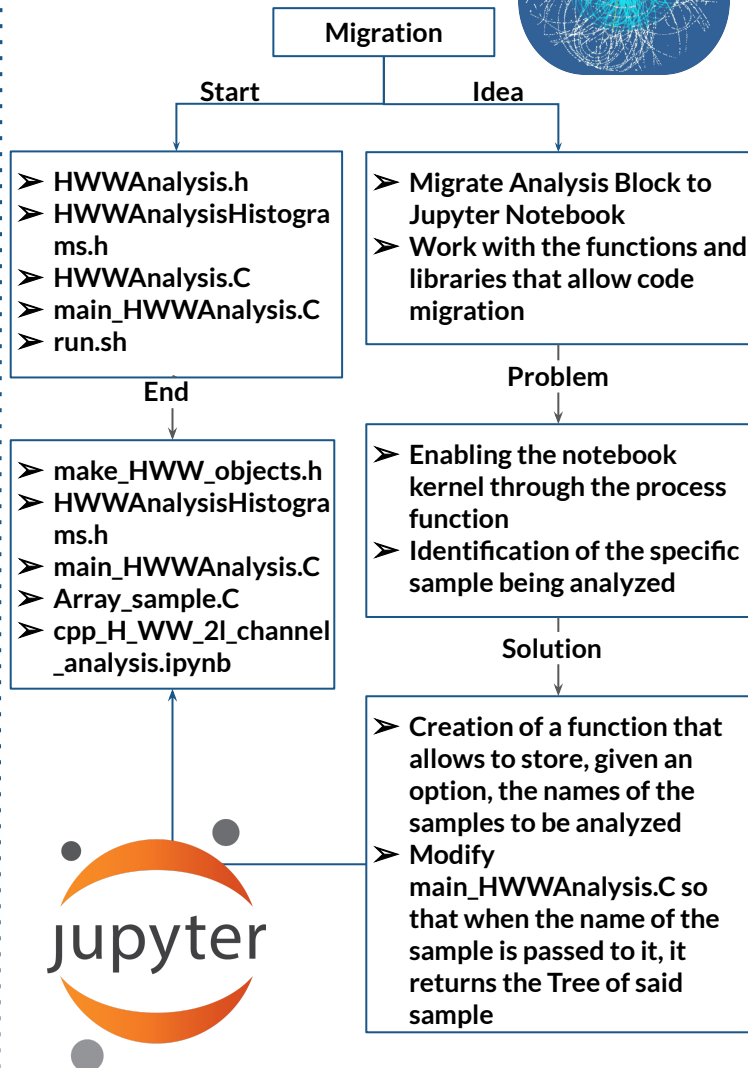
1 Objectives

- Perform a cloud-based computational migration (Jupyter notebook)
- Discuss the analysis of the higgs boson

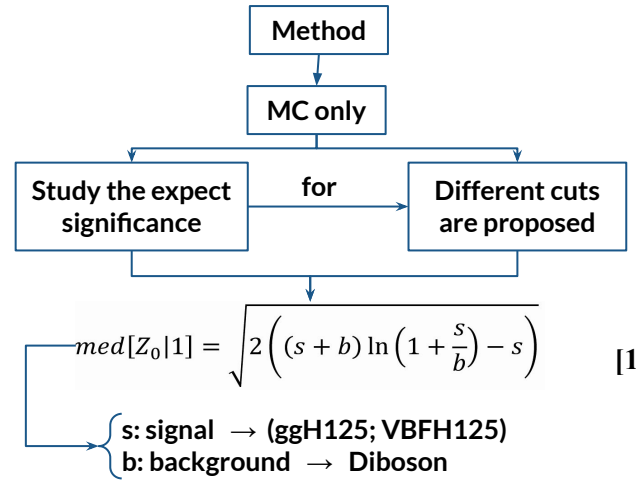
2 Methodology

The work plan is through two phases; the first, the creation of the Notebook with the migration of the code. The second consists of a proposal for improvements for the analysis

1. Creating the Notebook:



2. Improvement Approach:



The variation of cuts in some kinematic variables is currently being studied

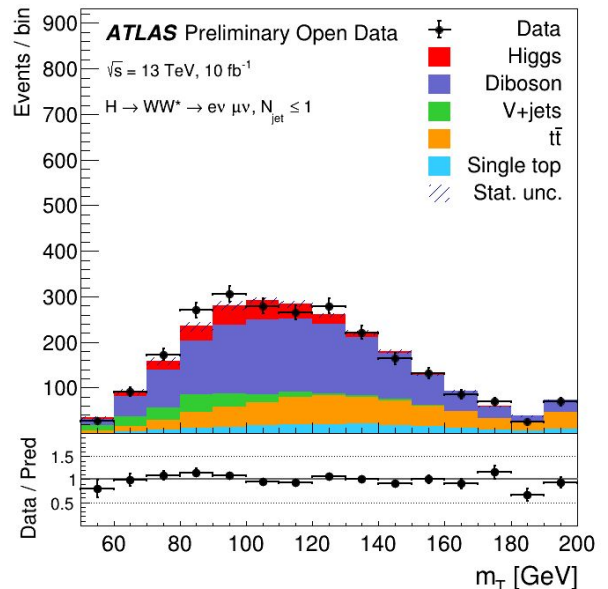
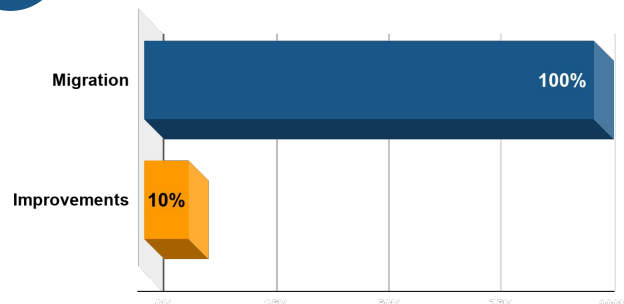


Figure 1: Dilepton transverse mass [2]

3 Current Status of the Thesis



References:

- [1] Cowan, G., Cranmer, K., Gross, E. et al. Asymptotic formulae for likelihood-based tests of new physics. Eur. Phys. J. C 71, 1554 (2011). <https://doi.org/10.1140/epjc/s10052-011-1554-0>
- [2] ATLAS collaboration. Review of the 13 TeV ATLAS Open Data release. Tech. Rep. ATLOREACH-PUB-2020-001, 2020.