# Structure of an hep-ex paper

# Structure of an HEP-EX paper

The structure of a HEP paper is very much standardised. The length of the paper is in general dictated by the journal but in any case the information contained in the points below will appear.

Title - author list: What do we want to report - who worked on it (this days often just the name of the collaboration, with the list of names given at the end of the paper or in a separate document)

Abstract: summarises in few lines what has been done and report the main result

Introduction: motivation, why the experiment was done; context, previous own's results of other existing experiments results

Detector description: basics of the experimental setup (nowadays detailed descriptions of the detectors are given in separate long papers)

Data and Monte Carlo samples: triggers, how do you collect the data; basic selections applied to remove backgrounds; what simulated data samples are used how they are generated and how they are used

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Signal extraction: statistical data analysis how do you separate signal from background and how are the signal properties are extracted

Systematic uncertainties: describe all known sources of systematic uncertainties and what is their impact on the results.

Results: numbers, plots and tables with all the experimental knowledge extracted from data. Typically results are presented as xxx ± yyy (stat) ± zzz (syst): statistical and systematic uncertainties

Conclusion/Summary: similar to the abstract. It summarises in a bit more detail all the results of the paper and present and often add comments or perspective for the future

Acknowledgements: whoever not signing the paper that contributed to the results (e.g. possible involved theorists, accelerator department, funding agencies, etc…)

Bibliography: cite all relevant papers! This is needed to point the reader to more details and for *scientific integrity* in reporting other experiment's results

# Papers review

Papers go through a throughout review before going public.

A typical results in an HEP collaborations goes through this kind of steps:

- people doing the analysis present their progress in small working groups every 1-2 weeks
- when ready they prepare an internal note describing all the details of the analysis and a preliminary version of the paper to go public
- a pre-Approval presentation is given to the relevant physics group (e.g. SM, B-physics, Higgs, SuSy, Exotica, Heavy ions) where all people working on similar subjects comment/criticise the work done
- a group of 3-4 people are assigned to the analysis to review it as deeply as they think it necessary (ask cross checks, supporting plots/measurements, etc…). Typically also a language editor is nominated to work on the style.
- people doing the analysis take into account all received suggestions, implement them and produce an updated version of the documentation
- an Approval presentation is given in front of the collaboration. This leads either to the results
- at this point the results can go public (uploaded to the collaboration web-page and on https://arxiv.org/list/hep-ex/new ). This is what is called a “preliminary result”.
- to be published to a journal see next page

# Papers review

The authors in agreement with the collaboration select a journal (JHEP, PLB, PRD, EPJC, etc…)

- the whole collaboration is asked formally to read and comment the paper. Typically 3-4 institutes are assigned to read the paper and comment
- people of the analysis receive all comments and implements them
- the review group checks all answers
- the paper goes to the final reading to check the final details
- the paper is submitted to the journal
- the journal assigns 3-4 referees to scrutinise the paper (peer review)
- typically a couple of interactions with the referees (internally people doing the analysis are helped by the internal reviewers group)
- the paper is published