Contribution ID: **712** Contribution code: **contribution ID 712** Type: **Poster**

Pyrate: a novel system for data transformation, reconstruction and analysis

The pyrate framework provides a dynamic, versatile, and memory-efficient approach to data format transformations, object reconstruction and data analysis in particle physics.The framework is implemented with the python programming language, allowing easy access to the scientific python package ecosystem and commodity big data technologies. Developed within the context of the SABRE experiment for dark matter direct detection, pyrate relies on a blackboard design pattern where algorithmic trees are dynamically generated throughout a run where root nodes are managed by a central control unit. The system guarantees an economical usage of memory allocated by algorithms where individual algorithmic instances can be reused for multiple objects. The framework is intended to improve upon the user experience, portability and scalability of offline software systems currently available in the particle physics community with particular attention to medium to small-scale experiments. In this presentation, the pyrate design and implementation will be discussed.

Significance

The presentation will introduce a new tool designed for data format transformations, object reconstruction and data analysis which improves upon the versatility and memory usage requirements of similar systems used for offline data processing and analysis at particle physics experiments, with particular advantage to medium to small-scale experiments.

References

Speaker time zone

Compatible with Asia

Primary author: Dr SCUTTI, Federico (The University of Melbourne)

Presenter: Dr SCUTTI, Federico (The University of Melbourne)

Session Classification: Posters: Raspberry

Track Classification: Track 1: Computing Technology for Physics Research