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Jas4pp. A Data-Analysis Framework for Physics and Detector Studies[1] SERGEI CHEKANOV[2], HEP Division, Argonne National Laboratory, 9700 S. Cass Avenue, Argonne, IL 60439, USA., GAGIK GAVALIAN, Jefferson Laboratory, 12000 Jefferson Ave., Newport News, VA 23602, NORMAN A. GRAF, SLAC Linear Accelerator Laboratory, 2575 Sand Hill Road, Menlo Park, CA, 94025
— This contribution describes the Jas4pp framework for exploring physics cases and for detector-performance studies of future particle collision experiments. Jas4pp is a multi-platform Java program for numeric calculations, scientific visualization in 2D and 3D, storing data in various file formats and displaying collision events and detector geometries. It also includes complex data-analysis algorithms for function minimisation, regression analysis, event reconstruction (such as jet reconstruction), limit settings and other libraries widely used in particle physics. The framework can be used with several scripting languages, such as Python/Jython, Groovy and JShell. Several benchmark tests discussed in the paper illustrate significant improvements in the performance of the Groovy and JShell scripting languages compared to the standard Python implementation in C. The improvements for numeric computations in Java are attributed to recent enhancements in the Java Virtual Machine.

[1]Jas4pp - a Data-Analysis Framework for Physics and Detector Studies
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