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Toolkit for data reduction to tuples for the ATLAS experiment

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The final step in a HEP data-processing chain is usually to reduce the data to a 'tuple' form which can be efficiently read by interactive analysis tools such as ROOT. Often, this is implemented independently by each group analyzing the data, leading to duplicated effort and needless divergence in the format of the reduced data. ATLAS has implemented a common toolkit for performing this processing step. By using tools from this package, physics analysis groups can produce tuples customized for a particular analysis but which are still consistent in format and vocabulary with those produced by other physics groups.

The package is designed so that almost all the code is independent of the specific form used to store the tuple. The code that does depend on this is grouped into a set of small backend packages. While the ROOT backend is the most used, backends also exist for HDF5 and for specialized databases.

By now, the majority of ATLAS analyses rely on this package, and it is an important contributor to the ability of ATLAS to rapidly analyze physics data.

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