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Physics Data Processing with Google Protocol Buffers

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Historically, HEP event information for final analysis is stored in Ntuples or ROOT Trees and processed using ROOT I/O, usually resulting in a set of histograms or tables.

Here we present an alternative data processing framework, leveraging the Protocol Buffer open-source library, developed and used by Google Inc. for loosely coupled interprocess communication and serialization.

We save event information as a stream of Protocol Messages, which can be read and written using high-performance code generated by the Protocol Buffer software. No seeks are performed in write mode, and during processing, making easy deployment over streaming network connections possible.

The performance of our code on an example mock-physics analysis is then compared with a ROOT analysis on the same data, showing the gain obtained by leveraging current developments from outside HEP.

Student? Enter 'yes'. See http://goo.gl/MVv53

yes

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