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Recent Improvements of the ROOT Fitting and Minimization Classes

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Advanced mathematical and statistical computational methods are required by the LHC experiments for analyzing their data. Some of these methods are provided by the Math work package of the ROOT project, a C++ Object Oriented framework for large scale data handling applications.
We present in detail the recent developments of this work package, in particular the recent improvements in the fitting and minimization classes, which have been re-designed and re-implemented with an object-oriented approach. New minimization algorithms have been added recently in ROOT and they can be used consistently for fitting via a common interface.
These algorithms include Minuit2, the new OO version of Minuit,
various minimization methods from the GNU Scientific libraries, stochastic and genetic algorithms.
Furthermore, a new graphics user interface have been also developed for performing and monitoring fits on ROOT data objects such as histograms, graphs and threes in both one or multi-dimensions.
We will describe in detail the new capabilities provided by the new fitting and minimization classes and the functionality of the new user interface.

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