

RSC: tool for analysis modelling, combination and statistical studies

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RSC is a software framework based on the RooFit technology and born for the CMS experiment community, whose scope is to allow the modelling and combination of multiple analysis channels together with the accomplishment of statistical studies. That is performed through a variety of methods described in the literature implemented as classes. The design of these classes is oriented to the execution of multiple cpu intensive jobs on batch systems or on the GRID, facilitating the splitting of the calculations and the recollection of the results. In addition the production of plots by means of sophisticated formatting, drawing and graphics manipulation routines is provided transparently for the user.

Analyses and their combinations are characterised in configuration files, thus separating physics inputs from the C++ code. The deployment of such a feature eases the sharing of the input models among the analysis groups establishing common guidelines to summarise Physics results.

A maximum statistical advantage can be drawn from the analyses combination allowing the definition of common variables, constrained parameters and arbitrary correlations among the different quantities.

RSC is therefore meant to complement the existing analyses by means of their combination therewith obtaining earlier discoveries, sharper limits and more refined measurements of physically relevant quantities.

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oral

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