

13 April 2011

Public information to responsible persons

Subject: proposed compromise package of Gfitter

For negotiations with Tord Riemann we would submit the following compromises, with the hope of a consensual solution of the conflict, despite the most recent escalations by Mr. Riemann. Some of these suggestions were already at the begin of our discussions presented to Mr. Riemann - and at first it seemed to us too that they would encounter on interest. Of course, the DESY ombudsman's report will have to play a role, too.

For your personal information, we would like to explain the Gfitter project in more detail:

- Gfitter, first and foremost, is a group of experimentalists working (currently only) at the LHC who have developed software (the generic fitting package: "Gfitter") for the phenomenological interpretation of past and - with a view at the LHC - future experimental results.

- Gfitter is written in object-oriented C++, and is based on the CERN Analysis package ROOT.

- The package consists of a large Gfitter fitting library - the heart of the software - and several so-called physics plugin libraries. - The fitting library includes and uses extensively statistical minimization and analysis modules, which are essential for a statistically robust and modern numerical analysis. It is highly developed code on which we are proud.

- Several physics libraries are used for theoretical predictions of experimental observables within the Standard Model (the package: gsm) and in numerous physical extensions.

- The Gfitter project is designed ambitious for many years: we want to interpret, as extensive as technically feasible, all relevant high-energy results in a theoretically coherent framework, and thus exclude new Physics as much as possible, or classify theoretically possibly discovered new phenomena at the LHC

The Standard Model Fit is here a very important part of the area we had to achieve, but our scientific goal goes far beyond. We are currently preparing one publication, which will mark this challenge to go beyond the standard model.

- The implementation of the standard model library and the accompanying numerical analysis was the subject of Martin Goebel's [diploma] thesis in 2008. He graduated with flying colors. It is in fact for experimentalists impossible and certainly unwise to reprogram the Standard Model Fit, without to rely on the great classics ZFITTER (the contact to ZFITTER was represented to us by Klaus Moenig). Martin has the Standard Model predictions as far as technically possible taken from the theoretical literature, Programmed in C++, and compared with ZFITTER (hence the frequent similarity of names, which has been introduced in order to facilitate comparisons, and this is not to be confused with patterned code). In some cases it appeared that the published formulas deviated from those in ZFITTER, or formula pieces were missing in the publications. In such cases Martin used public code of ZFITTER as a backup. The extremely complicated formula libraries for 2-loop electroweak and some QCD calculations that originate from the authors Degrossi et al or from B. Kniehl (both are not ZFITTER authors), and that have been integrated in ZFITTER, were translated by Martin from ZFITTER in C++.

In order to better understand these calculations, Martin met more frequently

with Ms. Awramik from Prof. Kniehl's group.

The Standard Model library of Gfitter is thus a new implementation of published theoretical calculations, relying on theoretical literature and, indeed, on ZFITTER. The important point though are the calculations, and not primarily the corresponding code. Here experimental physicists are clearly dependent on the work of theorists, as well as theorists, too, fortunately are allowed to use experimental results freely. It would be scientifically absurd if we as experimental physicists would have to repeat these calculations by ourselves, or if the theorists would refuse the use of their codes by experimental physicists. Important is here of course - as always - the correct referencing of all works used.

- The Gfitter code, although not publicly marketed by us (unlike the ZFITTER code) includes, contains in an exemplary manner at all relevant points clear information on the origin (literature or software) and authors of the calculations or the software in use. At no point it was here attempted to plagiarize.

The accompanying publication of our fitting results indicates with clear and complete references to the articles that we used and on which we have built.

We can only emphasize, in the clearest and ever and ever again, that we understand Gfitter as a new project, but in the best scientific sense building on the theoretical and programming developments of previous years, thereby developing them further.

We have no interest whatsoever to deny that origin (Why?). Nevertheless Gfitter is of course a research group independent of ZFITTER.

- By the way, despite its name ZFITTER is no fitting program, but truly a formula library, which calculates also experimental pseudo-observables that do not exist in Gfitter. On the other hand, Gfitter involves fitting and statistical and framework code which is missing in ZFITTER. The two projects have just a very different focus.

The Gfitter group is comparable to the LEP Electroweak Working Group, which uses ZFITTER in order to interpret experimental data. Only that the Gfitter group uses instead of ZFITTER the Gfitter package.

On the proposed compromises:

1) In conference talks and seminars we will emphasize with greater clarity than before that we

+ use ZFITTER code implementations in Gfitter code where the corresponding theoretical publications were inaccurate or incomplete;

+ use from ZFITTER the implementation of the 2-loop corrections of order $O(g^4 m_t^2/m_W^2)$ of the electroweak form factors, the authors of are Degrossi and Gambino;

+ use from ZFITTER the implementation of QCD corrections to the electroweak form factors which traces back to a library authored by Kniehl.

2) The same will be emphasized more clearly than before also in publications.

3) we would be ready, under circumstances, to work with the authors of ZFITTER on a joint paper on the numerical analysis of theoretical uncertainties in the predictions of electroweak precision observables. But only if it would be absolutely certain that Mr. Riemann completed his unbearable persecutions, and

also only if all ZFITTER authors would be involved in such work.

We had sent at the begin of the discussions similar proposals to Mr. Riemann, which he refused. We have them applied nevertheless for the Moriond EW talk by Max Baak, and will do so also at future opportunities.

[authors of Gfitter/GSM]