



**Universitätsförderung / ETH-Rat Mittel  
projektgebundene Beiträge**

**Formular "Bericht Gesamtprojekt"**

**Einreichfrist bis Ende Februar (an SBF und an ETH-Rat, Kopie an SUK)**

**Berichtsperiode** 1.1.2009 - 31.12.2009

**Projekt** **C-15 Swiss Center of Advanced Studies in Particle Physics  
in the LHC Era**

**Projektleiter/in**

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Weitere Personen, die an diesem Fortschrittsbericht mitgearbeitet haben (Name, Funktion im Gesamtprojekt, Hochschule/Institution, Ort)

Dr. Jean-Pierre Ruder, Project Administrator, University of Zurich (address see above)

Datum 22 Febr 2010

Unterschrift Projektleiter/in:

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**Kritische Stellungnahme zum Gesamtprojekt aus der Sicht der Projektleitung:**

**A) Inhalt**

1. Geben Sie eine kurze Beurteilung des Projektverlaufs: Welche Ziele wurden 2009 erreicht? Welche konnten nicht erreicht werden? Wo steht das Projekt im Verhältnis zur ursprünglichen Projektplanung (Meilensteine)?

The progress of the project in its second year is remarkable, despite the fact that the LHC has started its operations only in November 2009. All partnering institutes have accomplished the search for matching funds as requested.

Several of the goals set for 2009 have been reached, whilst others are in a less advanced stage. The reasons for this are mainly (1) the delayed start of operations of the LHC, which took place in November 2009, (2) the approval of the ProDoc request only in 2009, and (3) the difficult situation regarding the outreach structure, funding and activities.

Goals reached include:

- full implementation of the administrative organisation: full insertion of the Project Administrator, first closure of the financial accounts, first annual report.

- 3rd round of PostDocs: advertisement, evaluation and selection of three additional PostDocs with strong interest in LHC physics and detector hard- and software, plus a strong know-how in IT. Three excellent PostDocs were selected from one international call for applications resulting in 54 candidates. The selected candidates are attached to three Swiss Institutes and started their work in the second half of 2009 with the three LHC experiments concerned (ATLAS, CMS and LHCb) [for names and justification for selection please refer to the reports from the "Unterprojekte"].

- cooperation C-15 - CSCS Manno: The goal of improving the utilisation and making closer connections / links with the supercomputing centre Manno (LCH Tier 2 Centre) is fully achieved for CMS and is being implemented for ATLAS and LHCb.

- submission of the revised and completed ProDoc application for PhD students: the revised request was approved by the SNF in fall 2009. With its research and educational modules at PhD level, it complements nicely the C-15 project. As an immediate effect, each of the partnering institutes has nominated a ProDoc coordinator and some institutes have already hired PhD students under this scheme. Others are in the planning stage and will implement the programme in the next months.

- preparation for hiring several PhD students: see above.

- workshops in particle physics:

a) Higgs Boson Phenomenology, University of Zurich, 7-9 January 2009: The Center for Theoretical Studies in Zürich has organised this workshop with the aim to bring together all the specialists in order to prepare the community for the challenges which will be posed in the search for Higgs boson(s) and

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the understanding of experimental results amid their discovery. The WS was attended by some 60 students (15% from abroad) listening to talks and lectures from 37 speaker (5% from abroad).

b) Astroparticle Physics, EPFL, 2/3 June 2009: The two-day CHIPP Workshop on Astroparticle Physics covered the area of astroparticle physics, astrophysics, cosmology, and interlinked to high-energy particle physics. The event attracted mostly participants from Swiss institutes, including doctoral students, and provided an excellent opportunity to learn the objectives, updated status and future plans of the field. Scientific cross feeding with the physics at LHC was a particularly interesting issue.

- outreach: A new CHIPP outreach coordinator (PD Dr. H.-P. Beck, Berne) has been elected by the CHIPP Board to succeed Prof. Dissertori in this task. Beck produced an analysis of the present outreach situation suggesting the creation of a small committee with representatives active in outreach from all universities. The committee has already met once and works on the harmonisation of the outreach activities in particle physics across Switzerland. At present, the nomination of a new national node for the CERN LHC communication group succeeding Gerber (ETHZ) is imminent.

General outreach activities were numerous (European Physics Master classes at University of Berne and in Zurich [University / ETHZ], CERN based events, public lectures, presentations at high schools and clubs [such as the Rotary Club], experiment specific web pages) and an additional effort has been put into including educational aspects (collaboration with CERN to equip a travelling exhibition, links to high-school teachers, pupils [special guided tours to the ATLAS, CMS and LHCb pits at CERN for several 'Maturaklassen']). CHIPP has also participated at the Hamburger Hafengeburtstag (Switzerland was invited as guest country).

- advertisement of the CHIPP Prize 2009 (end-April 2009), evaluation of the candidates and award of the prize: The CHIPP Prize for the best PhD student in Experimental or Theoretical Particle Physics (diploma, 3000 CHF, talk during the CHIPP Plenary), is awarded yearly. Organized by Prof. A. Ereditato (University of Berne), the 2008 prize was awarded to Pedro Schwaller from University of Zurich; for the laudatio see report from "Unterprojekt" Berne.

- good progress has been made regarding the matching funds from University of Zurich, where a total of 151'000 CHF has now been pledged.

- preparation of 2010 activities: CHIPP PhD School 2010, Ascona, Jan 2010 (neutrino physics, experimental methods and detectors): the advertisement stirred a lot of interest with some 50 students applying for it. The organisation of the school (selection of lecturers, lecture timetable, accommodation and meals, travel arrangements and support for visa applications) was very intensive in November/December 2009.

- FOLIS: To facilitate the participation of Swiss groups in large collaboration projects in accelerator physics done outside CERN as well as non-accelerator particle physics, CHIPP has proposed to the

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State Secretariat for Education and Research SER a specific fund for such large research infrastructure participations (FOLIS = Fonds for Large Infrastructures). The SER is considering to introduce this funding line in the BFI bill 2012 and 2013-2016 respectively.

- The restricted European Committee for Future Accelerator (R-ECFA) has reviewed the situation of particle physics in Switzerland (March 2009, EPFL). The committee evaluated very positively the role of CHIPP coordinating the particle physics programme in Switzerland and the strong support to CERN by the Swiss government. The outreach effort was considered to be the area where further support would be needed.

Goals partly reached include:

- The integration of the PostDocs already hired was fully achieved regarding the detector commissioning; however, data taking was only possible with cosmic rays, since the LHC was not operational for the first 10 months of 2009.

Goals not reached include:

- Preparation of the Workshop on High Energy Frontier, University of Zurich: due to the late re-start of the LHC (no physics data yet available), the preparatory activities have been put on hold and will be resumed in early summer 2010.

- The fostering of the public awareness of the Swiss LHC contribution was hampered by missing funds and by the somewhat slow progress made in planning the travelling exhibition and other LHC PR actions. The Swiss Industry Day has been postponed to a time, where industry can bid for the LHC and detector upgrade.

The list of milestones shows that the overall delay of those parts related to the ProDoc programme and to the LHC physics data exploitation has reached now two years compared to the milestones as set in the C-15 request in 2007, but in comparison with the last year's annual report and planning, no further delays have occurred.

administrative milestones:

activity	Date planned	Date achieved
Teaching coordination with other schools settled	1 Jan. 2008	to be tackled in spring 2010 (ProDoc granted only in fall 2009)

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Lecture programme for the first year defined	1 Febr. 2008	to be tackled in spring 2010 (ProDoc granted only in fall 2009)
Start first PhD student	1 Febr. 2008	done at Geneva & ETHZ; under prep at Berne & EPFL (ProDoc granted only in fall 2009)
Start first lectures	Spring 2008	under preparation (ProDoc granted only in fall 2009)
scientific milestones:		
Activity	Date planned	Date expected
First workshop on LHC physics	June 2008	Sept 2010
Initial physics results available	Jan 2010	Jan 2011 (LHC delayed)

### 2. Welches sind die Ziele 2010? Entsprechen sie den geplanten Zielen? Gibt es Veränderungen in der Projektplanung?

Due to the late approval of the ProDoc request (Sept 2009) and the delayed LHC start, activities associated with the PhDs and with the LHC data analysis can start only in 2010, i.e. with a delay of two years. This leads to difficulties regarding the achievement of the goals set for the C-15 project, as the end of the approved funding is nearing.

The following goals have been set for 2010:

- PostDocs already hired: data taking and physics analysis (all year);
- replacement of the PostDocs leaving for permanent positions elsewhere (ETHZ, Berne);
- cooperation C-15 - CSCS Manno: follow-up of the implementation of the collaboration agreements between the institutes and the supercomputing centre Manno (LCH Tier 2 Centre);
- full implementation of the granted ProDoc request: ProDoc Research Modules that are linked to the ProDoc Education Module "Particle Physics in the LHC Era" (see section 'Goals reached') propose coordinated training programmes for particle physics students in Switzerland, with special emphasis on the physics programme of the Large Hadron Collider (LHC) at CERN. Several PhD students' positions are now being filled;
- Preparation and organisation of the PhD courses including exercises and examinations;

- outreach: implementation of the new outreach collaboration structure and renewed planning to foster public awareness of the Swiss LHC contribution including the setting up of an up-dated web page; continued effort on general outreach activities (European Physics Master classes, CERN based events, public lectures) including educational aspects (links to high-school teachers, pupils);
- advertisement of the CHIPP Prize 2010 (Q2/2010), evaluation of the candidates and award of the prize.
- continue and organize workshops in particle physics:
  - a) PhD School Ascona, 13-24 Jan 2010;
  - b) Course on Astrophysics at very high energies (Q1/2010);
  - c) WS on High Energy Frontier (Q3/2010);
  - d) WS on Symmetries and Interactions at Low Energies and the Precision Frontier (Q3/2010);
  - e) Zuoz School: Gearing up for LHC physics (Q3/2010);
- funding of C-15: The funding for 2012 will have to be further discussed with SUK (including the request for transfer of unused funds) and first steps with respect to the funding period 2013-2016 will have to be undertaken;
- promotion of FOLIS (Fonds for Large Infrastructures): The dialogue with SER and other agencies regarding the FOLIS funding will continue;
- Round Table 'International': The discussion about the procedure to identify and designate official Swiss representatives in the bodies and committees responsible for new infrastructure projects is planned for Spring 2010 (Round Table participants: SER, SNF, CRUS, scnat);

## B) Finanzen

### 3. Wie beurteilen Sie gesamthaft die Verwendung der Bundesgelder?

To a large extent, the funds for 2009 have been used as planned, the factor for the individual partnering institutes lying between 79% and 94%. If one looks at the salary line only (which represents some 95% of the overall project funds), the factors are lying between 82% and 89%. There is a rather big uncertainty factor for planning the 'Betriebsmittel' and the 'Tagungskosten', where only approx. 25% of the funds available have been used this year. This is explained by the fact that not many conferences and meetings have been supported; it is expected that this will change to a certain extent in 2010. Nevertheless, we will shift some of the funding for 'Tagungskosten' to the line 'Saläre' (see below).

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Again, for reporting purposes, the expenditures associated with the project lead (central administration, accounting, 'Betriebsmittel', 'Tagungskosten', etc.) have been distributed equally to all the project partners (20% each). Further, the costs for the shared PostDocs from the 3rd round – linking the experiments with the CSCS Manno – are also split between the partnering institutes concerned (ATLAS: BE & GE; LHCb: EPFL & ZH; CMS: ETHZ only).

### 4. Werden allfällige hohe Überträge Ihrer Meinung nach im nächsten Jahr verwendet oder sollte das Gesamtbudget angepasst werden?

The carry-over to 2010 amounting to 131 kCHF (13% of the 2009 funds) will be set aside for the zero-funding extension in 2012. This will allow the project to continue producing scientific output also in that year. However, the reduced pace will make it difficult to create the sustainable PhD and PostDoc programmes as set out in the project proposal. In addition, the continued difficulty to find funds for a sustained outreach programme threatens the success of this element of the project.

Therefore, the overall funding level for the project should not be reduced; in the contrary, a modest support for 2012 would better allow to bridge the gap into the next project phase.

### 5. Gemäss Verfügung des SBF und des ETH-Rates ist die Projektleitung verpflichtet, für jede wesentliche\* inhaltliche oder finanzielle Änderung die Zustimmung der Schweizerischen Universitätskonferenz einzuholen.

Wollen Sie der SUK einen Antrag vorlegen?

ja

nein  (weiter bei Punkt 6)

### Bitte formulieren Sie hier Ihren Antrag:

According to the instructions received from SUK (letter of 29 June 2009), requests for redistribution of funds among the partnering institutes and between budget lines shall no longer be submitted to the funding agencies for approval, provided that the total annual amounts are not affected. Reporting in the Annual Report shall suffice.

Bearing this instruction in mind, we would simply like to inform that we plan

a) to alter the distribution of the 2010 funds between institutes as follows:

- 5 kCHF from Berne to Geneva (Berne new: 199 kCHF);
- 14 kCHF from Zurich to Geneva (Zurich new: 298 kCHF; Geneva new: 207 kCHF);
- 10 kCHF from ETHZ to EPFL (ETHZ new: 203 kCHF; EPFL new: 197 kCHF), and

b) to shift the total 2010 income for 'Tagungskosten' to 'Saläre'. We expect that the carry-over for 'Tagungskosten' will provide sufficient funding to cover the year 2010.

This redistribution takes account of

- the reported differences in funding needs at the individual partnering institutes as well as
- the smaller than anticipated need for funding 'Tagungskosten'.

\* Dies sind grössere Verschiebungen von Mitteln (SBF und/oder ETH-Rat) zwischen den Rubriken oder Verschiebungen zwischen den Institutionen.

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Independent from these 2010 amendments, we will submit - within the dead-line given - a request for extending the project into 2012, as offered in the SUK letter dated 16 October 2009.

### 6. Bemerkungen:

Thanks to the agreement of SUK/SER to revise the payment schedule and the corresponding individual amounts for each project partner the spending profile and the income match much better than in the first year of the project. The Project Leader hopes that this fruitful flexibility will continue for the remaining years of the project.

The possibility of facing a zero-revenue year (2012) places a heavy burden on the project as such and might impact on the goals defined in 2007. The problem concerns mainly the replacement of the PostDocs having started already in 2008, where only short time assignments might be possible, threatening the quality of the project work as a whole.