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**ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLÉAIRE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH**

EIGHTY-FIRST PLENARY ECFA MEETING

Schuster Laboratory, Whitworth Hall

Manchester - 21 July 2007

MINUTES

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LIST OF PARTICIPANTS

Chairman:	K. Meier	Germany
Secretary:	P. Hansen	Denmark
Members:	R. Aleksan	France
	Th. Alexopoulos	Greece
	B. Åsman	Sweden
	U. Bassler	France
	C. Bemporad	Italy
	A. Blondel	Switzerland
	M. Bosman	Spain
	M. Calvetti	Italy
	P. Chochula	Slovakia
	A. De Roeck	CERN
	J.-P. Delahaye	CERN
	E. Elsen	Germany
	J. Engelen	CERN
	D. Favart	Belgium
	R. Ferreira Marques	Portugal
	B. Fulton	NuPECC
	P. Hansen	Denmark
	J.-D. Hansen	Denmark
	D. Horvath	Hungary
	K. Huitu	Finland
	G. Ingelman	Sweden
	E. Kajfasz	France
	J. Kalinowski	Poland
	F. Klein	Germany
	N. Konstantinidis	United-Kingdom
	M. Krammer	Austria
	D. Kuhn	Austria
	R. Leitner	Czech Republic
	C. Lutken	Norway
	P. Malecki	Poland
	L. Mandelli	Italy
	Th. Mannel	Germany
	N. McCubbin	United-Kingdom
	M. Merk	France
	K. Moenig	Germany
	K. Österberg	Finland
	L. Poggioli	France
	E. Rondio	Poland

U. Straumann	Switzerland
F. Richard	France
P. Watkins	United-Kingdom
M. Winter	France
G. Wormser	France
X. Wu	Switzerland
C. Wulz	Austria
F. Zwirner	Italy

Minute-Writer: G. Bissmire

Apologies:	J. Alcaraz	Spain
	R. Aymar	CERN
	F. Bradamante	Italy
	P. Buchholz	Germany
	F. Ceradini	Italy
	V. Cerny	Czech Republic
	C. De Clercq	Belgium
	S. De Jong	Netherlands
	K. Desch	Germany
	S. Gascon-Shotkin	France
	G. Giudice	CERN
	Th. Hebbeker	Germany
	M.J. Herrero	Spain
	J. Kuehn	Germany
	A. Levy	Israel
	F. Linde	Netherlands
	D. Linglin	France
	Th. Peitzmann	Netherlands
	B. Spaan	Germany
	P. Strolin	Italy
	C. Vander Velde	Belgium
	A. Wagner	DESY

EIGHTY-FIRST PLENARY ECFA MEETING

The meeting was called to order at 2.00 p.m.

WARK, welcoming members to the Joint European Physics Society (EPS) - Plenary ECFA, explained the changes to the format of the meeting following the approval by the CERN Council of “The European Strategy for Particle Physics” at a special session held in Lisbon in July 2006. A key element of the process that had led to the Strategy Document was the input that the Strategy Group had received from within the particle physics community. Ensuring that it continued to receive the necessary input from within the community would be an important factor if ECFA was to comply with its terms of reference and with the role foreseen within the framework of the Green Paper by the CERN Council Working Group on Organisational Issues related to the Strategy for Particle Physics in Europe. In that context, the objective was to use the Plenary ECFA meetings, including the two-yearly joint EPS - Plenary ECFA meeting, to gather input from the community by replacing the reports from the heads of the national and international laboratories with presentations intended to promote discussion. In particular, he hoped that the Panel Discussion scheduled under Item 8 would provide an opportunity for younger members of the community to provide their input.

1. APPROVAL OF THE DRAFT AGENDA

(Item 1 of the Agenda) (ECFA/06/248)

On the proposal of the CHAIRMAN, it was agreed to postpone the approval of the Draft Minutes of the previous meeting and the Committee’s discussion on the appointment of new members of ECFA (Items 2 and 3 on the Draft Agenda) until after the Panel Discussion scheduled under Item 10 on the Draft Agenda.

The Draft Agenda (ECFA/06/248), as amended, was adopted.

2. HEP IN EUROPE – ECFA ACTIVITY REPORT

(Item 4 of the Agenda) (K.H. Meier)

The CHAIRMAN, reminding members of the role of ECFA as defined in the Green Paper by the CERN Council Working Group on Organisational Issues related to the Strategy for Particle Physics in Europe, presented his report¹. He notably highlighted a number of events in 2007 that would affect the future of particle physics in Europe (the delivery of the draft Reference Design Report for the ILC in February, the approval by the CERN Council for additional resources for the Organization for the years 2008-2011 and the closure of HERA at DESY after 17 years of successful operation), outlined the procedure for the Committee's country visits to the Member States, and gave a brief overview of the results of the 2006 ECFA Survey on Particle Physics in Europe². Finally, he explained that the speakers at the present meeting would review the status and recent developments for five of the strategic activities identified in the European Strategy³, namely:

- an LHC luminosity upgrade (S. Tapprogge);
- high gradient acceleration technologies (S. Tantawi);
- the ILC – Reference Design Report (RDR) and the next steps (B. Foster);
- the neutrino oscillation facility design study (A. Blondel); and
- the Super-B project (M.Giorgi).

Observing that the talks were intended to provide the basis for the Panel Discussion scheduled under item 8 of the revised Agenda, to which all present were encouraged to contribute, he suggested that possible topics for the Panel Discussion should include:

- physics (complementarity, missing pieces);
- dependencies - relations (physics, machine and timescales);
- international situation;

¹ Available at <http://indico.cern.ch/conferenceDisplay.py?confId=18333>

² See document ECFA/RC/06/342/Rev.2.

³ See <http://council-strategygroup.web.cern.ch/council-strategygroup/>

- size and strength of communities; and
- financial volumes, competition for funding.

Responding to a question from BLONDEL on the future role of the CERN Council in coordinating projects such as the studies for a neutrino facility, the CHAIRMAN explained that the CERN Council was in the process of redefining its role within the framework of the European Strategy for Particle Physics. According to the new structure proposed by a Council working group, chaired by G. Herten, the Council, when meeting in European Session, would receive advice from a Strategy Commission on such projects.

The Committee took note of the Chairman's report.

3. LHC UPGRADE SCENARIOS – MACHINE, DETECTORS AND PHYSICS

(Item 5 of the Agenda) (S. Tapprogge, Mainz University)

TAPPROGGE presented his report⁴ describing a possible timeframe for a future LHC upgrade and underlining that, given the long lead-time for such projects, planning had to begin now. He then outlined the physics case for a future upgrade and examined alternative upgrade scenarios for the machine and detectors. The physics case for an LHC upgrade was strong although the exact specifications would be determined based on the first results. There was a new baseline scenario for a luminosity upgrade and the detectors would have to be upgraded in order to fully exploit the upgraded machine's physics potential.

Responding to a question from the floor, TAPPROGGE stated that detailed studies clearly demonstrated the physics case for having the LHC operating simultaneously with an e+e- linear collider.

A member stated that past experience of accelerator and detector upgrades had shown that a detector upgrade alone, without a machine upgrade, could deliver significant benefits in terms of the physics results.

The Committee took note of the report by Tapprogge.

⁴ Available at <http://indico.cern.ch/conferenceDisplay.py?confId=18333>

4. HIGH GRADIENT ACCELERATION TECHNOLOGIES

(Item 6 of the Agenda) (S. Tantawi, SLAC)

TANTAWI presented his report⁵ on the progress of the US collaboration performing research into high gradient technologies for a multi-TeV linear collider. The collaboration's objective was to determine the gradient potential of rf-powered particle beam accelerators, and to develop the necessary accelerator technology to achieve those high gradients. Harnessing the momentum of the NLC/JLC development programs and working in conjunction with the on-going CLIC studies, the collaboration would explore the possibility of pushing the useable acceleration gradient from the 65 MV/m, reliably achieved in NLC structures, to 180 MV/m or higher. Advancing the state of the art in this area was essential to the realisation of a post-ILC, multi-TeV linear collider using two-beam rf power generation.

Responding to a question from BLONDEL concerning the extent to which the results from the collaboration could be applied to CLIC, TANTAWI explained that the collaboration's primary objective was to define the limitations of the technology. However, the work would also contribute to the on-going R&D on CLIC.

The Committee took note of the report by Tantawi.

5. THE ILC – RDR AND NEXT STEPS

(Item 7 of the Agenda) (B. Foster)

FOSTER, observing that he had given a detailed presentation on the ILC-RDR at the previous day's R-ECFA meeting, presented his report⁶ which focused on the next steps to be taken by the Global Design Effort (GDE). The draft RDR had been published in February 2007 and the final Report would be published and presented to the ILCSC in August. The RDR was a conceptual design and many R&D and engineering design issues still remained. However, the RDR provided a reliable basis for detailed engineering design & costing. The next document, which would contain much more technical detail, was the Engineering Design Report (EDR) due in 2010. Matters that would have to be

⁵ Available at <http://indico.cern.ch/conferenceDisplay.py?confId=18333>

⁶ Available at <http://indico.cern.ch/conferenceDisplay.py?confId=18333>

addressed, included industrialisation and siting. Hitherto, Europe had played a very strong part in the GDE. However, the EDR phase required an increase in resources and the limited resources currently available at CERN, which was the major European centre of engineering expertise, might compromise that goal. During the EDR phase, the GDE would have the two-fold task of producing a blueprint for ILC construction that reduced the project's cost and of mounting a political and scientific campaign to convince governments and the general public that the ILC was a good investment. The GDE was working to a technically driven timeline which foresaw the delivery of a construction proposal in 2010 and the start of construction in 2012, for completion in 2019.

Responding to question from BLONDEL about the number of detectors proposed for the ILC, FOSTER explained that there was no immediate physics case for having two detectors instead of one. The proponents of a two detector alternative would have to make their case. In any case, if the decision was taken to build two detectors, they would have to be complementary.

Responding to a further question from BLONDEL about the site for the ILC, FOSTER stated that the GDE had received expressions of interest from a number of sites but none had come forward to host the ILC in line with the timescale currently proposed.

The Committee took note of Foster's report.

6. v-OSCILLATION FACILITY DESIGN STUDY

(Item 8 of the Agenda) (A. Blondel, Geneva)

BLONDEL presented his report⁷ on future neutrino beams in Europe and FP7. Reminding those present that the European Strategy for Particle Physics stated that “6. Studies of the scientific case for future neutrino facilities and the R&D into associated technologies are required to be in a position to define the optimal neutrino programme based on the information available in around **2012**; Council will play an active role in promoting a coordinated European participation in a global neutrino programme”, he described the physics case for a neutrino facility and the progress of the on-going studies by the different European and international collaborations in the field and the outcomes of the International Scoping Study (ISS) and of the International Design Study (IDS)

⁷ Available at <http://indico.cern.ch/conferenceDisplay.py?confId=18333>

launched in March 2007. Looking at the case for a neutrino factory and a beta beam facility, he examined how a proposed neutrino facility would fit in with a future LHC upgrade. Finally, he outlined the work envisaged as part of the EUROv programme and preliminary Integrated Activities (IA) schemes for which an application for funding through the European Union's Seventh Framework Programme (FP7) would be made.

The Committee took note of the report by Blondel.

7. THE SUPER-B PROJECT

(Item 9 of the Agenda) (M. Giorgi, Pisa)

GIORGI introduced his report⁸, informing the Committee that a Conceptual Design Report (CDR)⁹ for the Super-B project had been published in April 2007. Pointing to the recent successes in the field of flavour physics, he presented the case for the Super-B project and outlined the different options under consideration for a future such facility. A report from an International Review Committee appointed to review CDR was expected in December 2007. Coordinated by its Steering Committee, the Super-B community was preparing to submit its case to the European Strategy Group. In the meantime, accelerator studies to optimise the machine parameters continued, a body had been established to coordinate detector R&D and physics groups were active updating the physics case for the facility, in particular looking at complementarity with the LHC.

The Committee took note of the report by Giorgi

⁸ Available at <http://indico.cern.ch/conferenceDisplay.py?confId=18333>

⁹ For further information go to <http://www.pi.infn.it/SuperB>

8. PANEL DISCUSSION

(Item 10 of the Agenda)

WARK, speaking as the moderator for the Panel Discussion, introduced the Panel members: S. Tapprogge, S. Tantawi, B. Foster, A. Blondel, M.Giorgi and K.H. Meier.

In the ensuing discussion the following points were raised:

- ILC

- The case for the detectors at the ILC will have to be made by their proponents.
- It is important that there is independent debate between the communities involved in different projects. However, there is also a need for greater coordination with a view to reducing the duplication of efforts.
- The case for having two detectors at the ILC is clear. Basic experimental method called for a second detector in order to corroborate the results from the first.
- One option might be to consider having two groups working with the same detector.
- Any money saved on the ILC might be spent in other fields of particle physics. The reverse is not the case.
- It is disappointing that CERN does not have a more significant involvement in the ILC.

- Super-B

- The Superbeam at KEK will be able to achieve a luminosity of 10^{36} by increasing the current. However, the machine's operating cost will be high and there will be problems associated with background. By contrast, the Super-B project promises to deliver a genuine superflavour factory.

- The European Strategy and the role of the CERN Council

- The European Strategy for Particle Physics identifies a number of projects, all of which are deemed essential to the future of the field. The order in which they appear in the Strategy Paper is not intended to suggest the order of priority attributed to each project.
- The European Strategy requires the role of the CERN Council to be redefined and for a change in the way European projects have traditionally been coordinated. The Council's role as the body responsible for overseeing the operation of the CERN Laboratory differs from its role in the context of the European Strategy, as its authority is limited to the CERN Budget. To fulfil its responsibilities in the context of the European Strategy, the Council will meet in special mode. It will be supported by a permanent subsidiary body, composed of scientists, which will be responsible for preparing its meetings. A meeting will be held every five years to review the Strategy.
- The structure has yet to be tested and will take time to consolidate. However, it will have to be effective by 2010-2012, when decisions of considerable importance to the future of the field will be taken.

- The European Strategy and the role of ECFA

- Within the framework of the European Strategy, ECFA will serve as an "incubator" in the early phase of any projects. Their realisation will then depend on the CERN Council.
- Some concerns remain about the respective roles of ECFA and the CERN Scientific Policy Committee (SPC) within the proposed structure.

- Competition with other fields of research

- Generally speaking, the number of projects for which funding proposals are submitted by the particle physics community is small compared to other areas of research and the case for particle physics projects is sometimes felt to be weak. It is important for the community not to focus all its efforts on a small number of programmes, based on the assumption that submitting fewer proposals will either increase the likelihood of projects being accepted or that too many proposals will

lead to funding being spread too thinly. Reducing, the number of requests submitted is likely to hurt the field.

- Funding

- Given the current concerns over the level of funding available to particle physics, cost is increasingly becoming an issue.

9. APPROVAL OF THE DRAFT MINUTES OF THE SEVENTY-EIGHTH PLENARY ECFA MEETING

(Item 2 of the Agenda) (ECFA/06/246/Draft)

The Draft Minutes of the seventy-eighth meeting (ECFA/06/246/Draft) were approved.

10. APPOINTMENT OF NEW MEMBERS OF ECFA

(Item 3 of the Agenda)

The CHAIRMAN informed the Committee that:

Dr. J. Chyla (Czech Republik), Prof. U.I. Uggerhoj (Denmark), Prof. V. Matveev (Russian Federation) and Dr. L. Lönnblad (Sweden) had been appointed new members of ECFA as from 1st January 2007; and that:

Peter Hansen (NBI Copenhagen) had been appointed as R-ECFA's new scientific secretary, replacing Ueli Straumann (Zürich).

The Committee took note of the report by the Chairman.

11. ANY OTHER BUSINESS

(Item 13 of the Agenda)

- Extension of ECFA/ILC workshop beyond 2007

The CHAIRMAN informed the Committee that the most recent meeting of the ECFA/ILC workshop (LCWS2007 - ILC 2007) had been held at DESY, Hamburg, from

30 May to 4 June and that planning had to begin for the 2008 workshop, which was likely to take place in Warsaw or Dubna.

On the CHAIRMAN's proposal, the Committee unanimously agreed to:

- extend ECFA/ILC workshops beyond 2007 until the end of 2010; and
- extend the term of office of François Richard as Chairman of the ECFA/ILC Workshops until the end of December 2010.
- Coordination of Integrated Infrastructure Initiatives (I3)

The CHAIRMAN informed the Committee that at its meeting the previous day, R-ECFA has decided to request S. Stapnes and N. McCubbin to coordinate European I3 proposals for detector R&D. To this end it had been agreed that the R-ECFA delegates would provide national contact persons. Stapnes and McCubbin would present a progress report and submit a proposal for establishing a Steering Group at the R-ECFA meeting in Berlin, in October 2007. The Steering Group's mandate would be determined at the P-ECFA meeting at CERN, in November 2007, and it would submit its proposals in February 2008.

The Committee took note of the information provided by the Chairman.

- Proposed dates of ECFA meetings in 2008

The CHAIRMAN informed the Committee that that the proposed dates of ECFA Country Visits to Greece, Portugal, Sweden, in 2008 were as follows:

- Portugal: from 14 to 15 March (Friday, Saturday);
- Sweden: from 9 to 10 May (Friday, Saturday); and
- Greece: from 10 to 11 October (Friday, Saturday).

The proposed dates of the Plenary ECFA meetings at DESY and CERN, in 2008 were as follows:

DESY: from 17 to 18 July (Thursday/Friday); and

CERN: from 27 to 28 November (Thursday/Friday).

Members were asked to submit proposals for changes to the proposed timetable of meetings before the R-ECFA meeting in Berlin, in October. The final timetable would be submitted for approval at the R-ECFA meeting in Berlin in October and the P-ECFA meeting at CERN in November.

The Committee took note of the information provided by the Chairman.

The meeting rose at 6.10 p.m.