

NEWSLINE

THE NEWSLETTER OF THE LINEAR COLLIDER COMMUNITY

DIRECTOR'S CORNER



The ECFA LC2013 workshop

This week's issue features a Director's Corner from Juan Fuster (IFIC-Valencia), chair of the Programme Committee of the European Linear Collider Workshop ECFA LC2013

by Juan Fuster

The European Linear Collider workshop, taking place in Hamburg from 27 to 31 May, coincides with very many important strategic processes at Japan, Europe and US, all of them nourished by the optimistic results from the LHC. Juan Fuster, chair of the workshop programme committee, explains the scientific and political context of the meeting.

AROUND THE WORLD

Setting the course for European particle physics

Strategy for particle physics adopted by CERN Council in Brussels

by Barbara Warmbein



On 30 May, at a special meeting hosted by the European Commission in Brussels, the CERN Council formally adopted the update

of the European Strategy for Particle Physics. This strategy sets the course for the future of this research field in Europe, making recommendations for projects and research sectors to be pursued with priority, both the near-term and the long-term future.

AROUND THE WORLD

Hiking like an electron

Three DESY scientists tackle a charity trailwalk in Japan

by Barbara Warmbein



Hiking for charity can be a bit like particle acceleration, say three DESY scientist who walked an Oxfam Trailwalk in Japan in May. Beta functions, final focus, samurais and a shrouded Mount Fuji were all part of their two-day adventure.



Impressions from Hamburg

Images: DESY

How do you keep a bunch of physicists and engineers entertained? Give them a sense of accomplishment ("we've finished the Technical Design Report!"), a challenge ("how can we tackle the problems of the next phase?"), a sense of momentum (good signals from Japan for potentially hosting the ILC). And a bag of gummy bears. This year's first big linear collider workshop, ECFA LC2013, is in full swing at DESY in Hamburg, and more than 300 people are busy discussing results and the future. Here are some impressions.

IN THE NEWS

from *Yomiuri Shimbun*

24 May 2013

日本経済復活 一つの提言 同友会セミナーで米大使

経済同友会の第 10 回全国経済同友会セミナーが 23 日、盛岡市の盛岡グランドホテルで 1 日間の日程で開会した。高橋真裕岩手経済同友会代表幹事 岩手銀頭取 は、(中略) 復興を加速させる新産業創出の目玉として、国際リニアコライダー 誘致の必要性をアピールした。The 26th meeting of the Association of Corporate Executives was held on 23 May in Morioka, Iwate. Masahiro Takahashi, Chairman of the Association of Corporate Executives of Iwate prefecture stressed the importance of the invitation of the ILC to Tohoku area as a driving force for the recovery which will create new industry)

from *Deutschlandfunk*

24 May 2013

Zukünftiger Riesening

Aber ein durchaus heikler Plan. Denn er stellt ein anderes, lange geplantes Megaprojekt der Teilchenforschung in Frage – den ILC, einen 20 km langen Linearbeschleuniger für Elektronen.

from *Sankei Shimbun*

24 May 2013

誘致を決議 北海道・東北六県議会議長会議 宮城

北海道・東北六県議会議長会議が 23 日、仙台市内で開かれ、次世代加速器「国際リニアコライダー」の東北誘致を求める決議案を全会一致で可決した。(The prefectural assembly chairmans of six prefectures in north east area and Hokkaido met on 23 May in Sendai, Miyagi, and the resolution to request the invitation of the ILC to Tohoku area was unanimously approved.)

from *Fashion headline*

23 May 2013

原宿ビームスでチームラボによる話題の動画「脊振ILC展」が開催

24日から29日まで、原宿の「トーキョー・カルチャート・バイ・ビームス TOKYO CULTUART by BEAMS」にて、チームラボ制作の動画作品「脊振 せふり ILCハイスクール」を元にした「脊振ILC展」が開催される。(From 24 to 29 May, the "ILC Sefuri" exhibition will be held at TOKYO CULTUART by BEAMS.)

from *RKB News*

23 May 2013

ILC誘致で佐賀県知事 「日本政府のやる気が重要

ILC=国際リニアコライダーの誘致を目指す佐賀県の古川知事は、スイスにある同じような国際研究施設を視察した報告で、今後は国としての取り組みが重要になるとの考えを示しました。 Saga prefecture governor Furukawa said at the briefing on his visit to CERN, that the Japanese government's effort will be the key for the realisation of the ILC)

from *physicscentral.com*

20 May 2013

How to Sell a Particle Accelerator: Positron-Electron Love Explosions

Several countries aim to host one of these international physics collaborations, and two regions in Japan have created marketing videos to garner support for a future ILC site. With the same goal in mind, both regions took radically different approaches to their video projects.

CALENDAR

Upcoming events

[European Linear Collider Workshop \(ECFA LC2013\)](#)
DESY Hamburg
27- 31 May 2013

[Higgs and Beyond](#)
Sendai, Japan
05- 09 June 2013

[XXVI International Symposium on Lepton Photon Interactions at High Energies \(2013 Lepton Photon Conference\)](#)
UCSF Mission Bay Conference Center, San Francisco, CA, USA
24- 29 June 2013

[IHEP XXIX-th International Workshop on High Energy Physics](#)

Protvino, Russia
26- 28 June 2013

[View complete calendar](#)

PREPRINTS

arXiv preprints

[1305.4020](#)
Implications of 98 GeV and 125 GeV Higgs scenario in non-decoupling SUSY with updated ATLAS, CMS and PLANCK data

[1305.4265](#)
Effects of Lorentz violation through the $\gamma \rightarrow W \nu_e$ process in the Standard Model Extension

[1305.5251](#)
A New Probe of Naturalness

[1305.5424](#)
Determination of $\tan(\beta)$ from the Higgs boson decay at linear colliders

[1305.5431](#)
EWSB from strongly-coupled dynamics: an EFT approach and implications for WW production

[1305.5766](#)
CLIC e^+e^- Linear Collider Studies – Input to the Snowmass process 2013

[1305.5872](#)
A comparative study of non-Gaussianity in ILC-7yr

DIRECTOR'S CORNER

The ECFA LC2013 workshop

This week's issue features a Director's Corner from Juan Fuster (IFIC-Valencia), chair of the Programme Committee of the European Linear Collider Workshop ECFA LC2013

Juan Fuster | [30 May 2013](#)



Not only ECFA LC2013 but also spring is in full swing on the DESY campus in Hamburg.

This year, the regional Linear Collider workshop is taking place in Europe at DESY (Hamburg, Germany) from 27 to 31 May 2013. The participants have been welcomed by a spectacular wide chromatic range of greens in Hamburg, accompanied by the inevitable rain and sun that both make this wonderful manifestation of nature possible. The magic potion served by the organisers (distributing umbrellas in the conference bags) has resulted in some cloudless skies.

The meeting coincides with very many recent events, facts and results – all of them relevant to the linear collider project. Enthusiastic discussions during the sessions, coffee breaks or at lunch and dinner did cover all these topics.

On the physics front, the Large Hadron Collider (LHC) results from the 7-TeV and 8-TeV runs confirm the discovery of a boson with mass of around 125 GeV, also named “H(125)”. “A” boson that, with present accuracy, each time reveals itself to look more and more like “the” long-sought Higgs boson. However, this new type of matter and new type of interaction, as was described by Jonathan Bagger in his introductory talk, needs a very extensive physics programme to probe its real nature: a programme that the LHC and the High Luminosity Large Hadron Collider (LHC’s next step) together with a linear collider with the characteristics of the ILC or CLIC can test intensively and accurately. The high precision provided by a linear collider will be necessary to understand whether this particle is in fact “the” Higgs boson as predicted in the Standard Model of particle physics and responsible for the electroweak symmetry breaking, whether it is elementary or composite, or whether it is embedded in more general models with extended Higgs doublets. Researches on the top quark should also be kept very present in our mind as it is often forgotten. The top quark is the heaviest elementary particle whose Yukawa coupling is at the order of one (the Yukawa interaction is used to describe its interaction with the Higgs boson) and may well hide mysteries to unveil. The LHC is in fact a top factory and most of the top quark characteristics should be measured there. However, some studies will still remain, awaiting the linear collider to come with its high-precision measurement. The top quark mass, the Yukawa coupling and the study of its anomalous couplings are a few examples. To study physics beyond the Standard Model, the present LHC limits disfavour the presence of new physics to energies below the TeV range. But there are still scenarios which allow exploring capabilities of new physics in the range of the ILC and certainly this argument is even more true for CLIC. The next LHC run at 13-14 TeV will be crucial to better understand the situation in this topic.

The ILC project has finished its *Technical Design Report* for the accelerator and the Detailed Baseline Design for the detectors. This enormous effort from the linear collider community demonstrates that the ILC can be built as a staged linear collider from 250 GeV to 1 TeV and can perform the relevant physics programme described previously. A volume describing the physics case of the ILC complements these documents. In getting to the present situation cooperation with CLIC has been very beneficial and positive. A worldwide event, *“From design to reality”*, is organised on 12 June at the same time in Tokyo, Japan, at CERN, Switzerland and at Fermilab, US, to formally present all this documentation to the physics community and the general public. In coincidence with this event, the old linear collider structure, which has managed to lead the project to the present status, will finish its mandate and transition to the new Linear Collider Collaboration led by Lyn Evans. We all recognise and thank the following people for their excellent work and leadership: Jonathan Bagger as chair of the ILC Steering Committee, Barry Barish as director of the Global Design Effort and Sakue Yamada as the Research Director.

From Japan, an extremely encouraging message to host the ILC is growing in strength and is becoming a solid hope for the community.

Local negotiations at the very high level are occurring in Japan and contacts with other countries, like the United States, have already started. The site selection is expected by this summer. Despite the difficult economic situation around the world, the present good results in particle physics, the fantastic work of the community with very limited resources and the existence of the Japanese initiative allow us to believe that in fact “we can” make it.



Participants of the ECFA Linear Collider workshop in Hamburg. Image: DESY

In addition, very important processes are happening also in Europe and US. In Europe, the [update of the strategy for particle physics](#) will be finished and adopted today. Highly positive recommendations for CLIC and ILC-Japan activities are included in this document. For the US the ‘Snowmass process’, “*Developing a US Strategy for Particle physics*”, is being performed. The results and recommendations of this process will soon be publically available, as well.

The very pleasant lab atmosphere of DESY embedded in its green scenario has thus provided a warm environment encouraging for in-depth discussions on the reality and prospects of the linear collider project. We all thank the DESY Linear Collider group for providing the splendid atmosphere and organisation of the event and especially Karsten Büßer who chairs the local organising committee.

[CLIC](#) | [DESY](#) | [ECFA LC2013](#) | [EUROPEAN STRATEGY FOR PARTICLE PHYSICS](#) | [HIGGS](#) | [ILC](#) | [TDR](#) | [WORLDWIDE EVENT](#)

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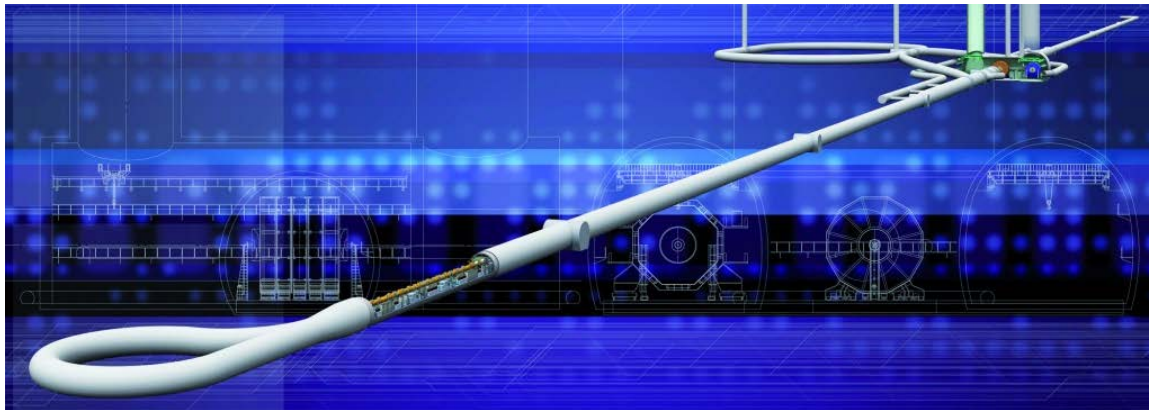
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AROUND THE WORLD

Setting the course for European particle physics

Strategy for particle physics adopted by CERN Council in Brussels

Barbara Warmbein | [30 May 2013](#)



The ILC is explicitly mentioned as a top priority in the update of the European Strategy for Particle Physics. Image: Rey.Hori

According to the paper, top priority is given to the continued operation of the LHC and its future upgrade for operation at higher luminosities, to ensure the exploitation of its full scientific potential. Other priorities for large-scale physics facilities are the development of a post-LHC accelerator project at CERN with global contribution, the European participation in the linear accelerator ILC if hosted by Japan and the development of a European neutrino research programme.

Moreover, the European Strategy recommends the continuation of a strong and diversified theory programme, studies in specific areas of particle physics in Europe and other regions with European participation, extension of research and development of innovative detector technologies and close collaboration with neighbouring fields such as astroparticle physics and nuclear physics.

The strategy stresses the importance of global collaboration in the field of particle physics and the coordinating role of CERN; this includes the strengthening of cooperation between the community of particle physicists and the European Commission. It also emphasises the social benefits and the research field's responsibility: it is important to ensure that central scientific activities such as communication and outreach will become part of all projects, that technology transfer is supported and that young scientists will always get a good training.

The European Strategy is regularly updated on the basis of current scientific results. With the discovery of the Higgs-like particle in summer 2012, the already planned update for this year had become even more urgent and concrete. The strategy is developed by the CERN Council Strategy Group, appointed by the CERN Council. It consists of representatives of all CERN member states, eight members of the European Committee for Future Accelerators ECFA and of the CERN Scientific Policy Committee (SPC), representatives of observer states and the directors of the largest European research centres.

The Strategy Group is headed by former ECFA chairman Tatsuya Nakada. In the past months, the group gathered recommendations from many projects, groups, countries and collaborations and, after consultation with the European community of particle physicists at a symposium in Cracow of several days, they wrote up a summary of about 15 recommendations.

Read [CERN's press release](#) | Read the [strategy brochure](#)

[CERN COUNCIL](#) | [CERN COUNCIL STRATEGY GROUP](#) | [CLIC](#) | [EUROPEAN STRATEGY FOR PARTICLE PHYSICS](#) | [ILC HOSTING](#) | [LHC UPGRADE](#)

AROUND THE WORLD

Hiking like an electron

Three DESY scientists tackle a charity trailwalk in Japan

Barbara Warmbein | [30 May 2013](#)

It's no secret that scientists have a tendency to totally immerse themselves in their work. Sometimes they also immerse themselves into an adventure – like DESY scientists Eckhard Elsen, Karsten Gadow and Carsten Niebuhr. The three of them boarded a plane to Japan in early May in order to take a walk for charity, a so-called Oxfam Trailwalk through Hakone National Park. This hike would lead the three (alongside another 178 teams) over 100 kilometres in an arc around Mount Fuji and was not allowed to last longer than 48 hours. This particular trailwalk had the added “feature” of an elevation of 5000 metres (going up) and 4000 metres (going down) through not particularly well-trodden terrain.

“This walk was a bit like particle acceleration at DESY,” says Eckhard Elsen. “Like a good particle bunch we kept our goal in sight, there a few section of excellent acceleration (downhill) and bad phase adaption (uphill). We needed a strong final focus to reach our target, and like at any collider our beta function was particularly steep right before the end. The final 20 kilometres included two impressive elevations.” The team, carrying the pragmatic northern German title “Wat mutt dat mutt” (“whatever must be, must be”) was completed by Englishman Joe Pournovin who lives in Japan and is a semi-professional trailwalker for charity. The men – all wearing TEAM t-shirts from the ECFA Linear Collider workshop that takes place in Hamburg this week – had to hike through the night in order to stay in the 48-hour time limit. There were eight check points along the way for food and general support, and the team had hoped for dramatic vistas of Mount Fuji, “but Fuji-san is a shy mountain,” says Carsten Niebuhr, “it likes to shroud itself in clouds.”



Four eager men about to hike in an arc around Mount Fuji with a t-shirt that says “I can get this straight” – and all of it for charity.



Shy Mount Fuji showed itself at the end of the hike.

The hike followed old Samurai paths from Odawara city to Yamanaka Lake, and the team „Wat mutt dat mutt“ reached the finish in about 30 hours. Despite the pouring rain on day 2, they came in at rank 39. A total of 527 trailwalkers finished the challenge. Completely soaked, the German-English team welcomed the warm waters of a nearby Japanese onsen in order to wake the next morning to a beautiful sunny view of Fuji-san.

[CHARITY](#) | [DESY](#) | [PARTICLE ACCELERATION](#)

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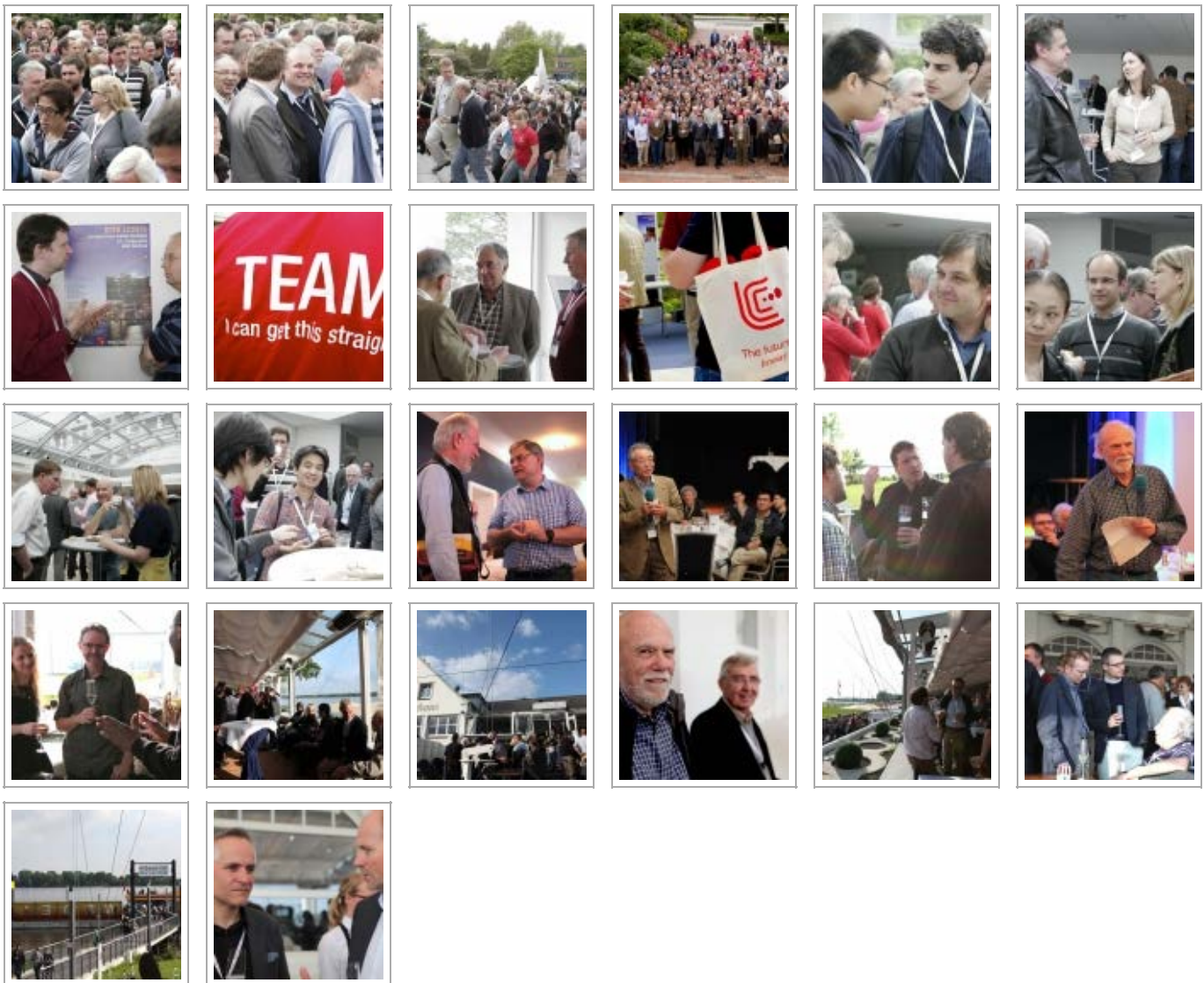
SLIDESHOW

Impressions from Hamburg

Images: DESY | [30 May 2013](#)

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[\[Show as slideshow\]](#)



[ECFA LC2013](#)

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