## AROUND THE WORLD

# The secret life of cavities – not so secret any more

Science photographer Heiner Müller-Elsner follows a cavity through all stages of production

by Barbara Warmbein

There's no doubt that the life of a cavity is exciting – lots of power, whizzing particles, superconductivity, the lot. How does it get there, what are the stations of its life? A new photo series is in production that follows a cavity from niobium ingot to cryomodule, and an exhibition of these images opens next week at DESY in Germany.

## DIRECTOR'S CORNER

# FALC meets in Japan

by Barry Barish

The Funding Agencies for Large Colliders met in the Shonan Village Center in Kanagawa, Japan on 17 April. FALC is an informal group of agency representatives who discuss large international projects in particle physics, both projects that are under way and those in the planning stages. FALC has given special attention to the ILC since it is a totally global initiative and has no home laboratory to oversee its development. The meeting in Japan discussed the future of ILC R&D beyond the Global Design Effort mandate to produce a Technical Design Report next year.

## IMAGE OF THE WEEK


# DESY meets India

Image: DESY, Lars Berg

What do huge sailing ships, science and India have in common? They were all present at this year's celebrations for the birthday of Hamburg's harbour. This year's special guest country was India, and as DESY has strong links with India especially in the field of photon science, DESY put up a tent in the harbour and presented itself, its science and its Indian scientists to the more than one million visitors.

## IN THE NEWS

from ***Nishinippon Shimbun***
23 May 2012
ＩＬＣ計画 九州を宇宙研究の拠点に (Make Kushu a center of excellence in research of the universe)
ＩＬＣ建設候補地の一つに挙がるのが福岡、佐賀県境の脊振山系だ。佐賀、福岡両県や九州経済連合会、九州大、佐賀大など産官学一体で誘致に乗り出しており、期待したい。

from ***Yomiuri Online***
23 May 2012
研究者ら脊振山系地質を確認 (Scientists check on the ILC candidate site)
素粒子の国際的な巨大実験施設「国際リニアコライダー（ＩＬＣ）」について、国内外の物理学の研究者ら約６０人が２２日、国内有力候補地の佐賀、福岡の両県にまたがる脊振山系を視察して地質などを確かめた。

from ***Saga Shimbun***
23 May 2012
背振山地は好適地 リニアコライダー国際研究者ら視察 (Sefuri – good site for the ILC)
施設は強固な地盤が重要な条件で、研究者たちは岩盤をハンマーでたたいて確認、「好適地」と高く評価した。

from ***Nishinippon Shimbun***
23 May 2012
内外研究者が脊振視察 次世代加速器の設置候補地 (World scientists visit ILC candidate site)
ＩＬＣの会合が福岡市東区の九州大で開かれるのを前に、参加する国内外の約７０人が２２日、誘致候補地の一つの脊振山系（福岡、佐賀県）を視察した。

from ***Iwate Nippo***
22 May 2012
北上山地周辺に研究都市 ILC誘致へ東北研究会素案 (Tohoku study group prepares a vision to built science city)
東北加速器基礎科学研究会（代表・里見進東北大総長、高橋宏明東北電力会長）の国際リニアコライダー（ＩＬＣ）を核とした東北の将来ビジョン策定検討委の第２回検討委は２１日、仙台市内で開かれ、ビジョンの素案が示された。

from ***New York Times***
21 May 2012
American Physics Dreams Deferred
At the same time, the department also canceled money for studies for the world’s next big physics machine, the International Linear Collider, which would be the successor to CERN’s giant collider. American scientists are resigned to the likelihood that it will not be built in the United States.

from ***Ars Technica***
17 May 2012
The state of particle physics—a report from Pheno 2012
The Standard Model isn’t perfect, but the alternatives now look worse.

## CALENDAR

### UPCOMING EVENTS

International Particle Accelerator Conference 2012 (IPAC12)
New Orleans, USA
20- 25 May 2012

ILD Workshop 2012
Kyushu University, Fukuoka, Japan
23- 25 May 2012

15th International Conference on Calorimetry in High Energy Physics (CALOR 2012)
Santa Fe, New Mexico
04- 08 June 2012

36th International Conference on High Energy Physics (ICHEP2012)
Melbourne, Australia
04- 11 July 2012

### UPCOMING SCHOOLS

The 2012 European School of High-Energy Physics
Anjou, France
06- 19 June 2012

View complete calendar

## BLOGLINE

11 May 2012
*Aidan Randle-Conde*
Happy birthday, Richard Feynman!

## PREPRINTS

### ARXIV PREPRINTS

1205.4751
The Impact of Non-zero θ_{13} on Neutrino Mass and Leptogenesis in a SUSY SO(10) Model

1205.4667
Status Report of the DPHEP Study Group: Towards a Global Effort for Sustainable Data Preservation in High Energy Physics

1205.3908
Light Higgs Studies for the CLIC CDR

1205.3822
Doubly charged Higgs from $e$-$γ$ scattering in the 3-3-1 Model

1205.3590
Enhanced coupling design of a detuned damped structure for clic

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AROUND THE WORLD

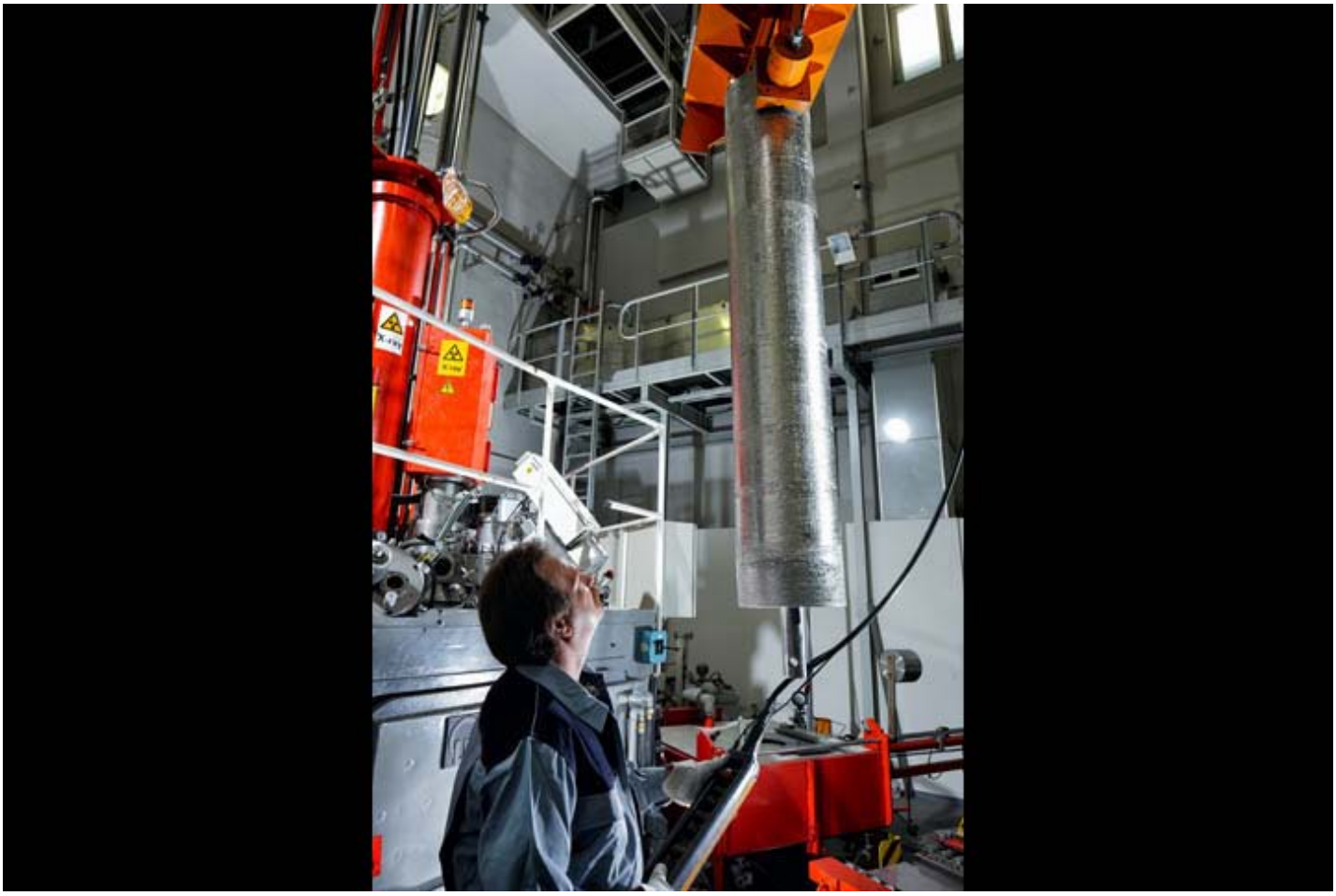
# The secret life of cavities – not so secret any more

Science photographer Heiner Müller-Elsner follows a cavity through all stages of production

Barbara Warmbein | 24 May 2012

Cavities will be the heartbeat of the ILC, accelerating electrons and positrons to very high energies so that they can collide in the centre of the detectors. The ILC's core technology, superconducting radiofrequency technology or SCRF, is also used in other accelerators, for example FLASH at DESY of the future European XFEL. Because they are so central to so many of its projects, and because they are also very attractive, DESY asked science photographer Heiner Müller-Elsner to follow a cavity almost from the mine to the module. Starting at the ingot of pure niobium, the cavity life story takes us to a big melting pot, numbered sheets, tests of all possible sorts, clean rooms and strings to the final cryomodule. Commissioned by ILC-HiGrade, which had at its core the SCRF cavity, Müller-Elsner shows the precision involved in all steps, the fascination of acceleration technology and of course the people that are involved in it.

Have a look at the slideshow to see a selection of the images. Or if you prefer total immersion: a photo exhibition opens on 30 May at DESY in Hamburg and Karsten Buesser from DESY will give a public talk called "Cool runnings – cold technology for fast particles". The event starts at 7 p.m. in the auditorium, the exhibition will be on show for two weeks. More info here.

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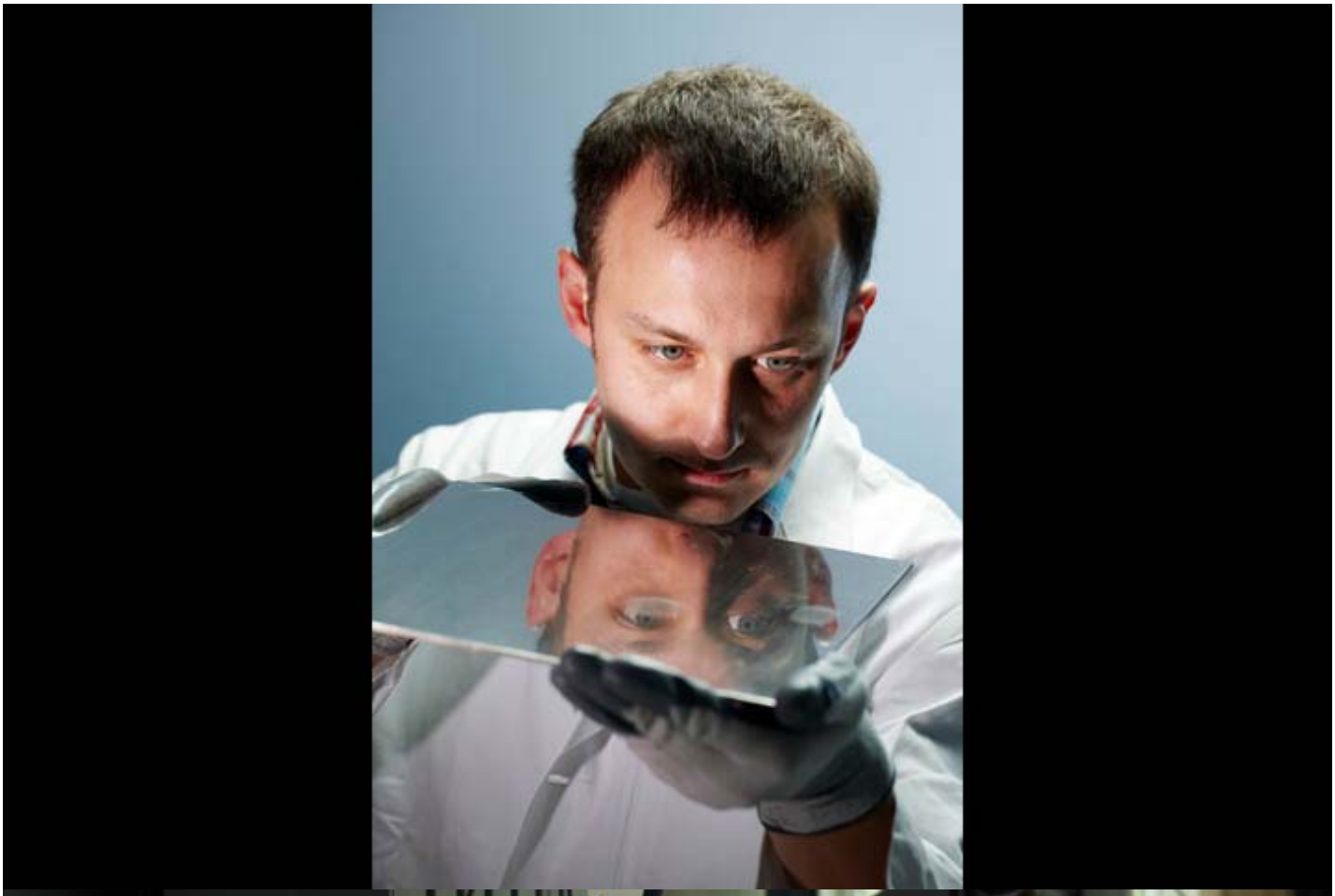

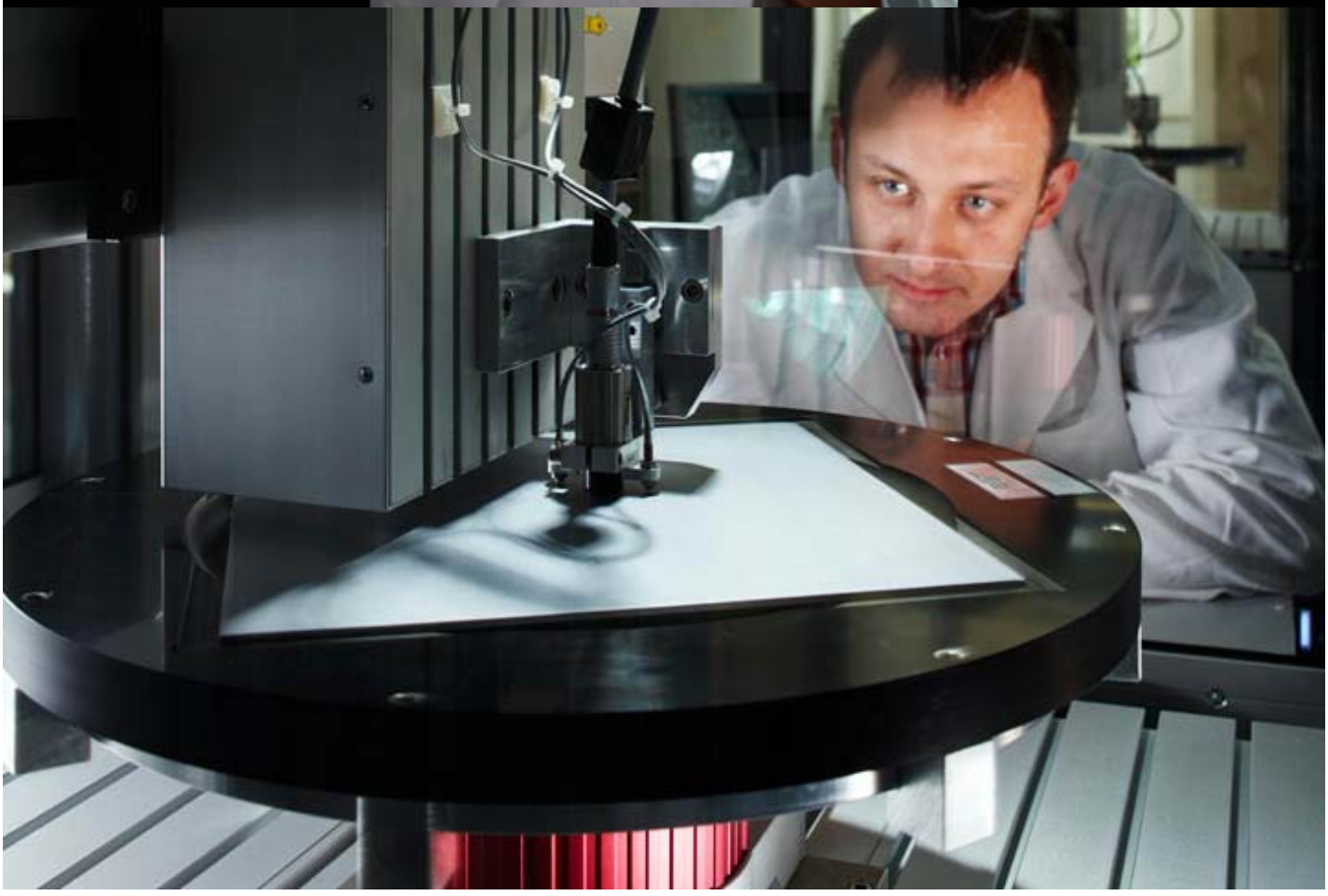

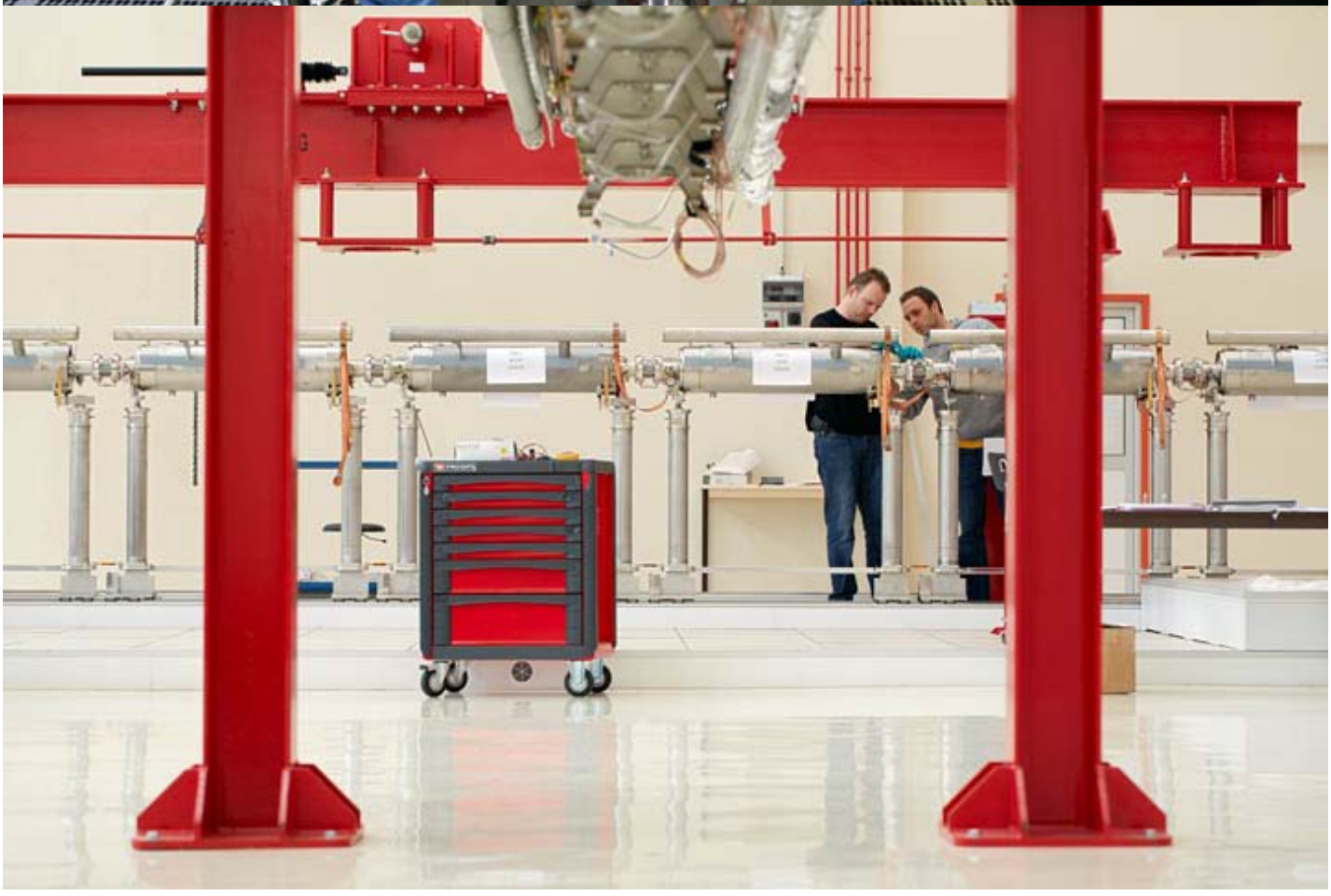


CAVITY | SCRF

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DIRECTOR'S CORNER

# FALC meets in Japan

Barry Barish | 24 May 2012

*Yasuhiro Okada, KEK, FALC Chair and Nobu Toge, KEK, FALC Secretary*


*The 2012 LHC run plan to acquire about 15 inverse femtobarns to be compared with the about 5 inverse femtobarns that have been acquired to date*

The ILC initiative is unique in many ways, but perhaps the most striking characteristic is that it is truly a global effort having no home laboratory to support or guide its efforts. Instead, scientific guidance comes from the International Committee for Future Accelerators (ICFA), currently chaired by Pier Oddone, through its subcommittee, the International Linear Collider Steering Committee (ILCSC), chaired by Jon Bagger. Oversight and advice on project and funding for ILC comes through the Funding Agencies for Large Colliders (FALC), an informal group of particle physics funding agency representatives. FALC met in the Shonan Village Center in Kanagawa, Japan on 17 April, where they discussed the future of ILC R&D following the completion of the GDE mandate to produce a *Technical Design Report*.

FALC discusses large international projects in particle physics, both projects that are under way and those in the planning stages. It has given special attention to the ILC since it is a totally global initiative and has no home laboratory to oversee its development.

This FALC meeting began with a series of reports on large projects around the world. Of note was the report of Rolf Heuer giving an update of the status and plans for the LHC at CERN. He described the plans for the 2012 running, before the extended shutdown. He said the goal is to take enough data to enable the CMS and ATLAS experiments to independently discover the Higgs boson. If necessary, the run could be extended for up to two months to reach that goal. In addition, this year's run will include a proton-lead ion run at the end of the year, as well as machine studies necessary to ensure that they will "allow high-energy, useful high-luminosity running" following the shutdown. This year's run will have an increased energy from 3.5 teraelectronvolts (TeV) per beam to 4.0 TeV per beam, effectively giving a higher peak (integrated) luminosity of about 15%, a higher Higgs cross-section of about 20 to 30% and possibly allowing an improved $\beta^*$ ("beta star") of 0.6 metres.

Fernando Ferroni, INFN and La Sapienza University, Rome, summarised the status and plans for the SuperB project in Italy. The laboratory for SuperB has been named "Laboratorio Nicola Cabibbo" (or Cabibbo-Lab). The present schedule is to complete site preparation and preliminary project definition by next October or November. The project team is effectively in place, the detector design is far along, and an updated budget and schedule are to be produced this summer. The design for including a photon

science facility has been changed to making the injector also serve as an X-ray free-electron laser machine. A crucial step to final approval will be a schedule and cost review by the Italian Ministry of Science next autumn. If all falls into place, excavation could begin as early as summer 2013.

FALC spent considerable time discussing the proposed future of the ILC R&D programme following submission of the ILC *Technical Design Report* in June 2013. The plans as proposed by ICFA and the ILCSC were presented by Pier Oddone and Jon Bagger. FALC agreed to key points that will enable ICFA to move forward with the appointment of an overall Linear Collider Director and a plan for the continuation of a common fund as we have had for the Global Design Effort. A review of the use of the common fund by the GDE and the funding to complete our mandate will be carried out this fall, along with initial planning for a new common fund for the post-TDR organisation.

*Fernando Ferroni, INFN, reported at FALC on the Italian SuperB project*

FALC | HIGGS | ICFA | ILCSC | LHC | POST-TDR | SUPER B | TDR