Work in progress

Preparations for the construction of an international linear collider have reached another milestone — but is the way ahead clear?

Already representing several years of research and development effort, details of a future International Linear Collider (ILC) have now been set down in a 'technical design report' (TDR). That report was formally handed to the steering committee of the ILC project in a ceremony in Japan in December, marking a major step towards the completion of the ILC plan.

The ILC project has grown out of a group of design efforts around the world aimed at building a machine that would at once complement and follow up the programme of CERN's Large Hadron Collider. The new collider, between 30 and 50 km in length, is intended to accelerate electrons and positrons to collision energies of, initially, 500 GeV, rising (after an upgrade) to 1,000 GeV. These are much lower energies than the 14-TeV collisions that will happen at CERN, but the 'cleaner' collisions of electrons and positrons — compared with those of protons in the LHC — will enable precise studies of the physics uncovered by the LHC, including that of the newly discovered Higgs-like boson. The linear geometry is essential to avoid the synchrotron losses that make a circular electron–positron collider at 500 GeV unfeasible.

That the handover of the TDR was performed at KEK, in Tsukuba, Japan, is significant: Japan is emerging as the nation most likely to host a future linear collider, an intention also set out in a recent document on the future strategy of the Japanese high-energy physics community (http://go.nature.com/dMwhmQ). That possibility now also has the formal support of German high-energy physicists — Germany itself having once been among the front-runners to host the project.

The TDR for the ILC will now be subject to a cost review, before landing on the desk of the newly established Linear Collider Collaboration in February. This organization will provide a framework for the progress not only of the ILC, but also of the Compact Linear Collider, or CLIC. The conceptual design report — an earlier stage of the process than the TDR — has now been produced for the CERN-based CLIC project, whose novel driving-beam accelerator technology allows a more compact design than that for the ILC. Furthermore, CLIC has the potential to reach collision energies of 3 TeV.

Taking these two technologies forward together makes great sense. And it will be interesting to see how these projects figure in the next European Strategy for Particle Physics, due to be updated in spring 2013. Despite the enthusiasm in Japan, others — particularly the governments and funding bodies of the United States and many countries in Europe — will take some convincing that investment in another high-energy collider is worthwhile. A clear signal that there is very much more physics to explore will be vital: the indication from the LHC so far, of what may be just a single, standard-model Higgs boson, is unlikely to make the case. ❐

A life among the stars

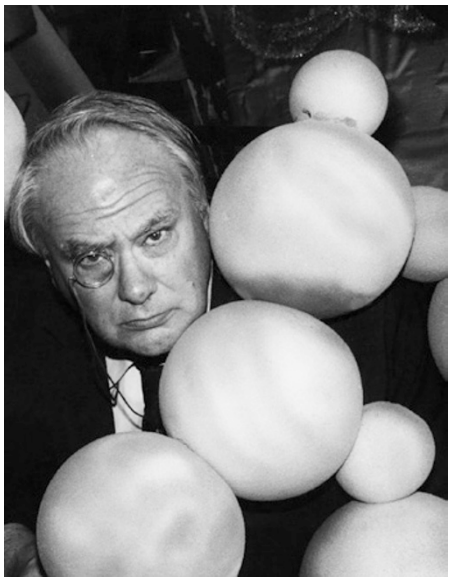
Sir Patrick Moore, presenter of *The Sky at Night* for 55 years, has died.

In 1957, amateur astronomer Patrick Moore was asked to present three programmes on star-gazing for the BBC. Fifty-five years later, Sir Patrick Moore was firmly in the record books as the longest-serving television presenter for that same programme: *The Sky at Night*. He presented his last episode the week before he died, aged 89, on 9 December 2012.

Each month since the first edition in April 1957 — ahead of the Sputnik launch, before the race to the Moon — *The Sky at Night* has featured a host of astronomical and space-science topics: from black holes and neutron stars, to news of a comet, meteor shower or planet visible at that moment in the night sky to any backyard astronomer. Moore fronted all but one episode (owing to a food-poisoning incident in 2004), his interest in astronomy having been inspired as a child by G. F. Chambers's book *The Story of the Solar System*. And without doubt, it is his energy and enthusiasm for his subject that has fuelled the success and longevity of the show.

Eccentric and monocled, the archetypal 'mad professor', and stunningly proficient on the xylophone — Moore was a well known public figure and widely credited as an inspiration to many astronomers and other scientists who had been young fans of *The Sky at Night*. Guests who have appeared on the programme include Carl Sagan, Fred Hoyle, Jocelyn Bell Burnell, Neil Armstrong, Buzz Aldrin and Arthur C. Clarke.

Moore was made an honorary fellow of the Royal Society for his work as a science communicator — work that Astronomer Royal Sir Martin Rees has rightly acknowledged as "a lifetime commitment". ❐



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