News

ICHEP 2010

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Abstract

This article contains reports on ICHEP 2010 which appeared in my blog at http://blog.vixra.org .

Key Words: ICHEP, LHC, Update.

July 22, 2010: Eyes Turn from CERN to Fermilab at ICHEP

Today saw the launch of the ICHEP parallel sessions and for those of us not able to attend it meant following the conference webcast. With about seven sessions running at once and only one video stream it is not possible to cover all the talks by webcast. The organisers appear to have anticipated that the reports from the Large Hadron Collider would draw most attention, so the LHC talks have been scheduled in the largest conference room and that is where the webcast came from too.

In the event, the LHC talks have been mostly about the technical performance of the collider and its detectors rather than real physics results. This was to be expected given that the number of collisions recorded so far is too small for any new physics to be observed. Meanwhile the teams from Fermilab have been talking about the latest results of their Higgs Boson searches. These have been keenly anticipated, so while the room hosting the LHC talk had many empty seats the Tevatron talks had standing room only.

Although the webcasts only covered the LHC talks, the slides for others are all available on the conference website, so we can get some idea of what we are missing. I won't try to summarise the talks from these slides because someone who actually saw the talks may do it better. There will be more Tevatron talks tomorrow combining high and low mass searches for each experiment CDF and DZero. On Monday there will be a plenary talk on the overall combined results of CDF and DZero together. That one will be webcast and should be the highlight of the conference.

Of the LHC talks I did watch the first one on "Optimisation of LHC beam conditions" by Helmut Burkhardt. This was a nice summary of how the beams work. My only disappointment was that it covered only all the good stuff that has been working well and said nothing of stability problems that still have to be overcome. I think it failed to give a sense of the challenges that have been overcome and those that still lie ahead. In his defense, time was very limited.

July 23, 2010: Combined Tevatron Higgs Searches at ICHEP

This afternoon there will be a couple of talks corresponding to Higgs searches at CDF and DZero (The two main experiments at the Tevatron). From the slides these are the two cheese and lettuce plots:

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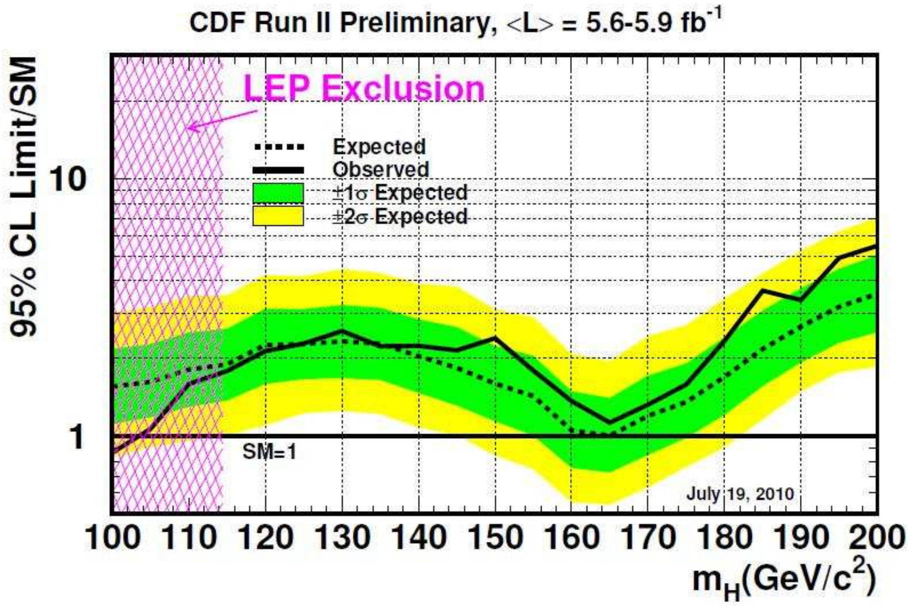
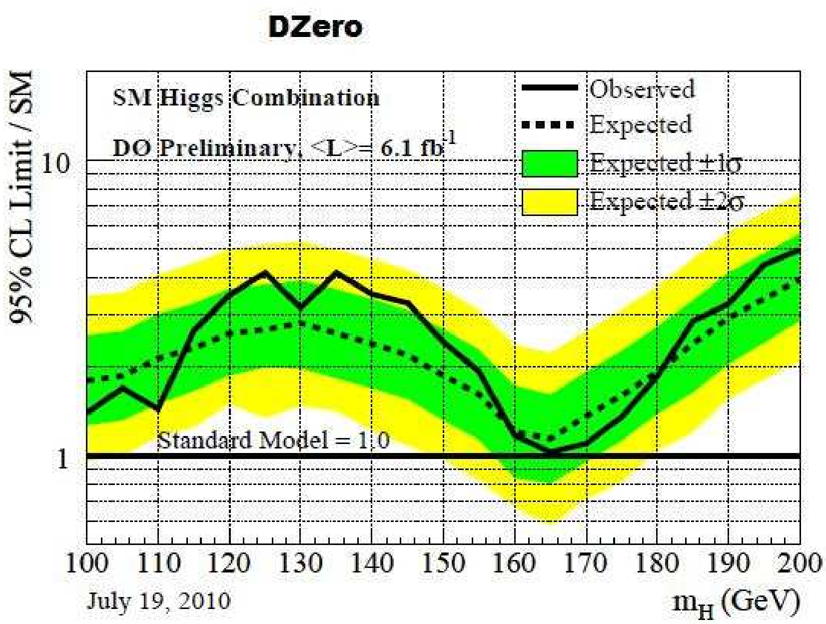




These plots combine the high and low mass searches for Higgs. If the black line goes below one they can exclude the Higgs mass range at the 95% confidence level. Both plots just fail to do that.

On Monday a final talk will combine these two plots and the result should be some exclusion around the 160 to 170 GeV mass range.

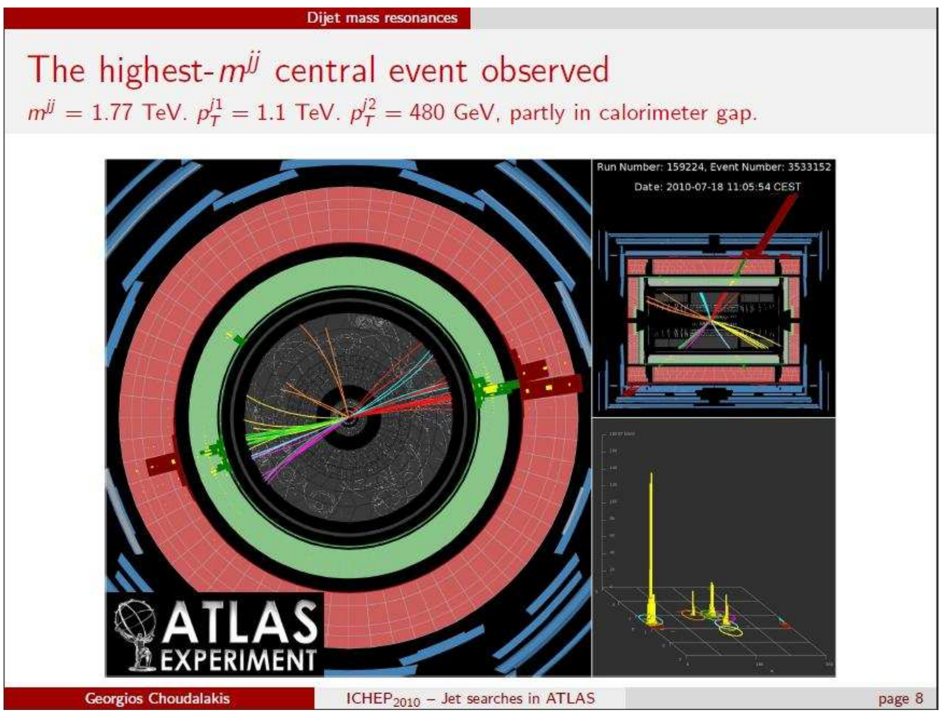
The DZero plot has some hint of a signal for lower mass, but not enough to count. The CDF has even less signal. Combining these plots properly is a complex process but it is difficult to see how a signal at 3 sigmas could be reached. I am guessing that Monday's talk will therefore go no further than an exclusion that is a little bit better than previous limits.

Hopefully someone who is able to see these two talks this afternoon will be able to report if there is anything that sounds more optimistic.

July 24, 2010: Amazing Dijet Event from ATLAS

Via the ICHEP webcast I watched the talk "Early Searches with Jets with the ATLAS Detector at the LHC" by Georgios Choudalakis yesterday afternoon. It included this dijet event with one jet of 1.1 TeV and another of 480 GeV. In fact some of the energy of the lower energy jet was probably lost in the crack between two calorimeters and its real energy may have been just as large, we were told.

Of course one event proves nothing but to have such a high energy diject at such an early stage is nonetheless tantalising. If they had a similar event like this for every 300 inverse nanobarns of data over the next month I think they would very soon be able to claim a discovery. Events with this much energy could never have been produced at the Tevatron so it is exactly what they need to look for to see new physics that could not have already been discovered.



In the same talk we were shown some other plots placing limits on various high energy resonances to demonstrate that they are already producing new physics results at the LHC, even if they are negative results so far. The integrated luminosity used in these plots was 296 inverse nanobarns, yet they have improved on the best limits set by the Tevatron using about 3000 times as much data.

To get that much they must have used data from runs up until the 18th July, missing just the final run before the conference. Earlier it had been said that they would have to use data up to just the end of June in order to get it approved in time.

July 24, 2010: Why No Data from Gravitational Wave Detectors? (ICHEP)

When I was a postgraduate student at the University of Glasgow I was sometimes taken down into the basement to see a remarkable experiment. It was a Gravitational Wave Detector and at that time in 1982 it was the state of the art. They never recorded any positive signal but since then some more impressive GWDs have been constructed including the two LIGO detectors and VIRGO which have arms several kilometers long.

One talk at ICHEP that I could not see because it was not webcast was "Gravitational wave detectors: First astrophysical results and path to next generation" by Fabien Cavalier. The slides end with a nice quote from Kip Thorn who has been one of the major players in getting LIGO up and running: "[I]nterferometers should detect the first waves in 2001 or several years thereafter (…)" It is now 2010 and still no gravitational waves have been detected.

To be fair to Kip Thorn we need to quote at least the full sentence from which this quote was taken. We find it in gr-qc/9506086: "If the source estimates described in this review article are approximately correct, then the planned interferometers should detect the first waves in 2001 or several years thereafter, thereby opening up this rich new window onto the Universe." So the fair interpretation is that the estimates of gravitational waves used in 1995 were not approximately correct. LIGO and VIRGO have set upper limits on how many gravitational wave sources there are. These are the "First astrophsysical results" from the title. Unfortuneatly nobody ever got a Nobel Prize for negative observational results even though they can be very important constraints for theorists.

The most promising sources for GWDs are inspiraling black hole pairs of neutron stars. These would produce a very characteristic signature in the detectors.

July 24, 2010: QCD Phases on the Lattice and Quantum Gravity

Yesterday there were some sessions on Lattice techniques aimed at non-specialists attending the ICHEP conference. Apparently the attendance was disappointing. That is not very surprising given the competition from other parallel sessions where new physics could be announced. Lattice theory has been around for a long time and mostly looks at QCD which is far from new.

As an ex-lattice gauge theorist myself I think there are some aspects of it that people working on more sexy subjects such as quantum gravity would benefit from understanding better. In particular they should understand how the phase diagram of QCD at high temperature and density is being charted using these non-perturbative methods. The reason they need to know this is that a similar phase structure should exist in quantum gravity and there is likely to be a strong (but approximate) correspondence through AdS/CFT duality that relates quantum gravity to a QCD-like theory.

In the QCD theory of the strong interactions there is believed to be a temperature known as the Hadgdorn temperature above which nuclear matter breaks down into a quark gluon plasma. This happens at around 10 billion degrees Kelvin. In quantum gravity according to string theory (if you don't like string theory dont switch off, this is just a short diversion) there is another Hagdorn temperature at around the Planck scale. That's about 10^{32} degrees Kelvin. What happens there?

According to string theory the length of strings becomes very large and effectively the concept of the string breaks down. Sometimes string theorists call this the topological phase of string theory because they think that spacetime loses its geometry in the hotter phase. The truth is that not much is known about what really happens because most of string theory is based on perturbative calculations and phase transitions are very non-perturbative. What might happen is that not only geometry of space-time is lost but topology too. In that case it should be called the non-topological phase, or pregeometric phase. To put it another way, spacetime evaporates. Even if you don't believe in string theory you might still consider this possibility. Some non-string theorists talk about geometrogenesis which is the process of cooling from the high temperature pregeometric phase to the more familiar geometric phase at the start of the big bang.

For now we can get some feel for the phase structure of quantum gravity by looking at the phase structure of QCD which brings me to one of the ICHEP talks from yesterday. However I'll do that in a separate post in case people get confused and think it was about quantum gravity.

July 25, 2010: Rumours, ICHEP, Sarkozy, and the International Linear Collider (ILC)

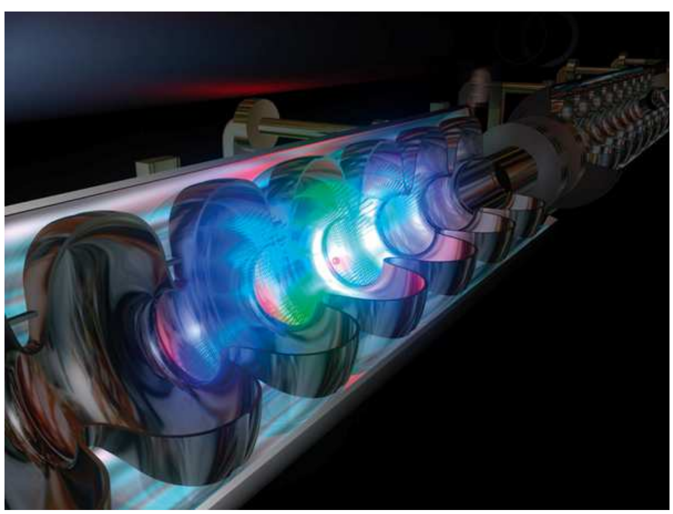
Yesterday the rumour mill appeared to be slowing down when it became clear that a simple Higgs excess from combined Tevatron data was unlikely. Now it is spinning up again with a report on the Reference Frame pointing out that some plots for a Higgs+bottom signal have mysteriously not been presented yet. Once again we need to wait for the Tevatron talk on Monday which has been pushed back to about 16:30 due to the address by Sarkozy at noon.

But is there something else going on? Why would a head of state turn up at a physics conference unless there is something news worthy about to happen? Perhaps he wants to be there when the God particle discovery is revealed to the world, but that does not really add up. The announcement can only come from a US lab and it is unlikely that the US would even alert the French president that something is to be announced.

Another clue is an ICHEP press conference scheduled for 1pm, shortly after the presidential speech. This was scheduled before it was known that the president was dropping by. This could just be a routine press conference to say what a great time everyone has had at the conference but I think there must be a little more than that. Could the press conference be another clue that an important physics result is to be announced? Well, it will take place before any talks that could describe anything new. I don't think that possibility is right.

So who will be at the press conference? There will be Guy Wormser who chairs the ICHEP organization committee, Rolf Heuer who is the Director general of CERN, Mel Shochet who is chairman of HEPAP in the US and Atsuto Suzuki who is chairman of the International Committee for Future Accelerators. Are these people just dropping by to tell us that as representatives of experimental particle physics on three continents that they think ICHEP was great and they are looking forward to the next one, or do they have something specific to announce?

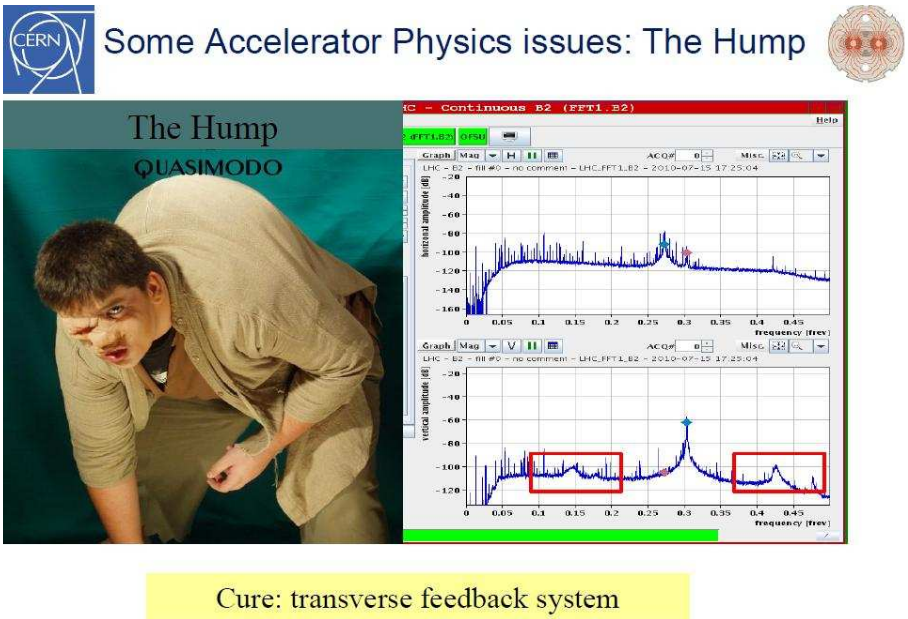
Of course the rather obvious clue is that the three main people at the press conference are the international representatives for the US, Europe and Asia for committees looking at the future particle accelerators. Their appearance suggests that they are about to announce some news about an international initiative, such as the International Linear Collider. My guess is that a deal has been reached on funding for the ILC and it will be built at CERN, and Sarkozy will announce this in his short address.



Update: There was no specific announcement about the ILC in the Sarkozy speech but he spoke extensively of French committment to funding for science in general and international projects for big physics in particular.

July 25, 2010: Meyers on the LHC Hump

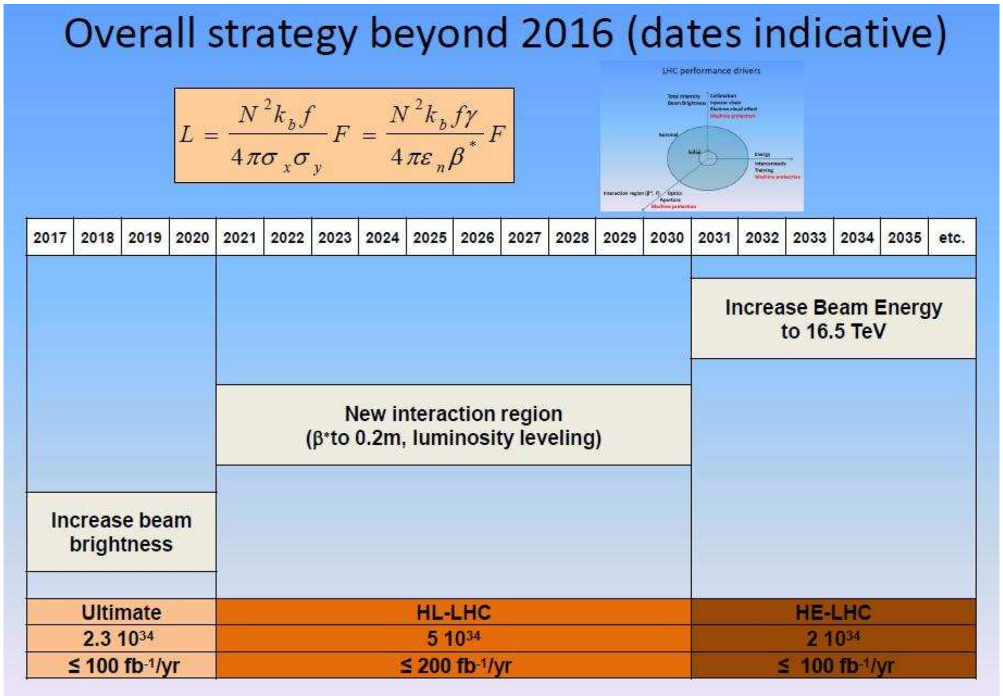
We have been following the story of the mysterious Hump at the LHC here on viXra Log, so it is nice to see that Steve Meyers will have something to say about it at his ICHEP talk tomorrow.



July 25, 2010: Future Particle Accelerators

Tomorrow's plenary sessions at the ICHEP conference are keenly awaited by particle physicists because of the rumoured possibility of some new physics results, but there is another reason for them to get excited. There will also be a lot of discussion about the future of particle accelerators.

The day will open with a talk by Steve Meyers about the progress so far with the commissioning of the LHC. He will also talk about the long-term future in which we could see the LHC upgraded from its current design limit of 14 TeV energy to 31 TeV. There will also be possible improvements in luminosity that could see it producing 200 inverse femtobarns of data each year. Although that talk is tomorrow the slides are already up so you can get an idea of what he is going to say already. The slide below gives an overview of the plans taken from yesterdays talk "LHC Machine Upgrades" by Roger Bailey.



After the talk by Meyers there will be a some reports of highlights so far from the LHC experiments. That will be followed by an address from Monsieur le Président de la République AKA Nicolaus Sarkozy and then there will be a press conference over the lunchtime break. Hopefully all this will be included in the webcast. It all seems like a lot of fuss to make over a physics conference so we hope this means that there will be some political announcement concerning the future of particle accelerators.

After some more interesting physics talks in the afternoon that will include the much-anticipated "Higgs Searches at the Tevatron" by Ben Kilminster, the day will end with a couple of reports that includes one from the International Committee for Future Accelerators. Sadly they have not yet posted their slides so we can only guess what they have in store for us.

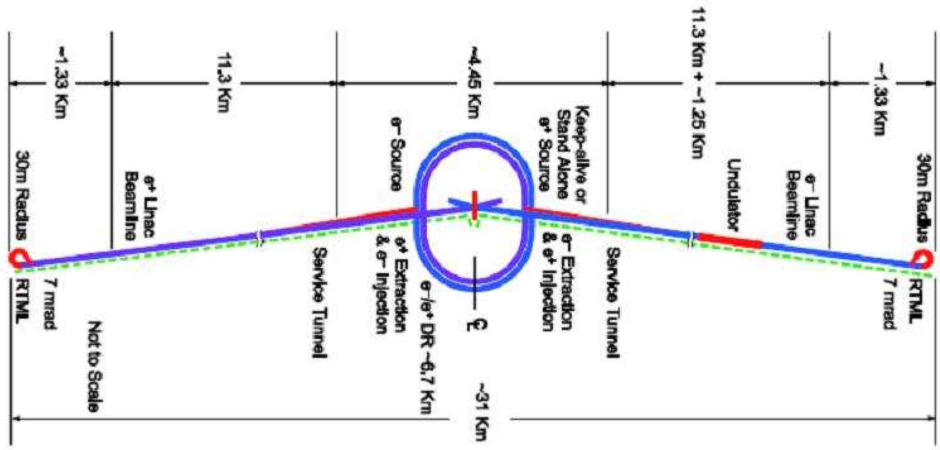
Luckily there were some talks yesterday about future colliders so we can look at some of those:

- "The Global Design Effort for the International Linear Collider", Barry Barish
- "Governance of the International Linear Collider Project", Brain Foster
- "CLIC Progress and Status", Daniel Schulte
- "The Large Hadron Electron Collider (LHeC) Project", Max Klein

The ILC (International Linear Collider) is the most talked about possibility for the next generation of collider. It will be an electron-positron collider like LEP, but unlike LEP it will be a linear design rather than a ring.

The advantage of lepton colliders over hadron colliders is that leptons have no known structure so they give much cleaner results. A high energy electron positron collider would allow detailed measurements to be made of particles discovered at the LHC. The disadvantage is that it is hard to accelerate electrons up to the same energies as protons. because they are much lighter they need to be pushed to higher speeds so that the relativistic gamma factor generates more energy, but at higher velocity they radiate away energy much faster when they are circulated in a circle. For this reason a linear design is mor effective.

In fact the design of a linear collider can incorporate circular and linear features in combination. One possible design for the ILC is like this,



The nominal design now under consideration will provide 500 GeV of centre-of-mass energy. That may seem a bit feeble compared to the energy of the Large Hadron Collider which is 14 times as much, but because leptons are not seen as composite at these energies, more of the energy will go into forming new particles than is normally possible with composite hadrons. Nevertheless, if they pick the ILC design now and then the LHC finds a new 600 GeV particle later this year, it will be a little frustrating.

The alternative is to adopt a more ambitious design for a linear collider known as CLIC (Compact LInear Collider) which would use normal conducting cavities rather than superconducting cavities. This could allow it to reach energies of 3 TeV. The main issue with CLIC is that its feasibility has not yet been demonstrated. If they are going to make a definitive decision now, it probably wont be CLIC.

There are other alternatives such as the LHeC project which is a compromise that fires electrons at protons. This has some advantages of its own but it does not appear to be a leading contender as yet.

An even more ambitious project that has been studied is a muon collider. Muons are leptons so they have all the advantages of electrons over protons in collision, while also being heavy. The trouble is that muons are unstable with lifetimes of two microseconds. At relativistic speeds this would be dilated but only to seconds at best. Given that it takes an hour or so to ramp up the energy of protons in the LHC this option does not seem very good. At best a very small number of collisions could be achieved. We will have to hope for the discovery of a more stable charged heavy particle if we want such a radical new approach (and who knows?)

The conclusion is straight forward. The only presently viable option for the next generation of colliders is the ILC. Tomorrow physicists may know more details about what their government sponsors have planned for them.

July 26, 2010: Sarkozy Addresses ICHEP

Nicolas Sarkozy has delivered a rousing speech to particle physicists at the ICHEP conference in physics. He talked of the need to ask fundamental questions in science and to continue focusing on long-term projects without letting any short-term crisis get in the way. While other countries have been tempted to reduce spending on science because of economic concerns he said that France has increased funding because they believe that science and technology is the solution to exit the credit crunch.

Sarkozy spoke of science in France with particular emphasis on Saclay who will benefit from a billion Euro investment. Then he turned to the international collaborations such as CERN saying that these were the future direction for physics.

He ended his address by saying that some people wondered why he would appear at a physics conference when there are so many political issues to concern him, but he says that nothing could be more important than international science and he need make no apologies for being there.

Of course there is a big practical reason why he wanted to talk to the physicists. The next collider project – the International Linear Collider – is now at a critical stage of planning. The big question for the politicians is where will it be located? CERN is an obvious candidate but it could just as easily be built in the US or Japan. The Large Hadron Collider could run for several decades and will keep the CERN site busy. The ITER international fusion project is already under construction in France. The politicians from the US and Japan will therefore argue that the ILC should go elsewhere. By addressing ICHEP, Sarkozy is showing the physicists that the government of France understands their goals and needs and is investing in science while other governments cut back. He knows that many physicists at the conference will be key in arguing the scientific case for where the ILC will be situated. His speech was designed to win their hearts and minds to clinch the case for building the ILC at CERN.

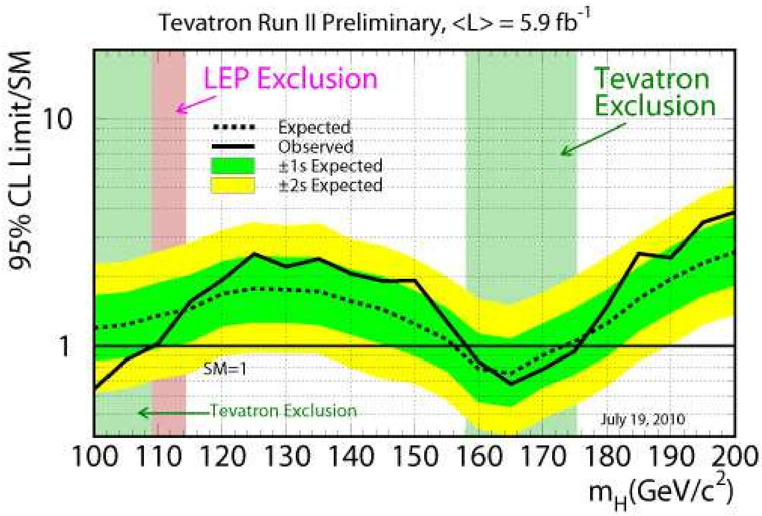
His 40 minute speech was greeted with a standing ovation from the 1000 physicists who packed the Palais of Congress to hear him talk in between reports on progress in particle physics around the world.

Update: It's interesting to see the press reaction to Sarkozy's address, or rather the lack of it. There have been very few reports, especially outside France. The Gardian blog has a report by Jon Butterworth describing the speech as enlightening. "I wish we heard more of that in the UK" he says. As a UK resident I share the sentiment. During the recent general election I spoke to our local conservative MP who canvassed at my door. "Why are there so many cutbacks in science?" I asked. I was hoping he would criticise the labour government who were making the cuts. "We need the cuts because there is a credit crunch" he said. But you cant just stop and start science, it is a long term enterprise, and furthermore science and technology is the bext hope for getting out of the crisis, especially in the UK where we have very little heavy industry, agriculture or natural resources to export. Should we just rely on the banking sector to recover and pull use out of the crunch, or should be build up our technological exports?

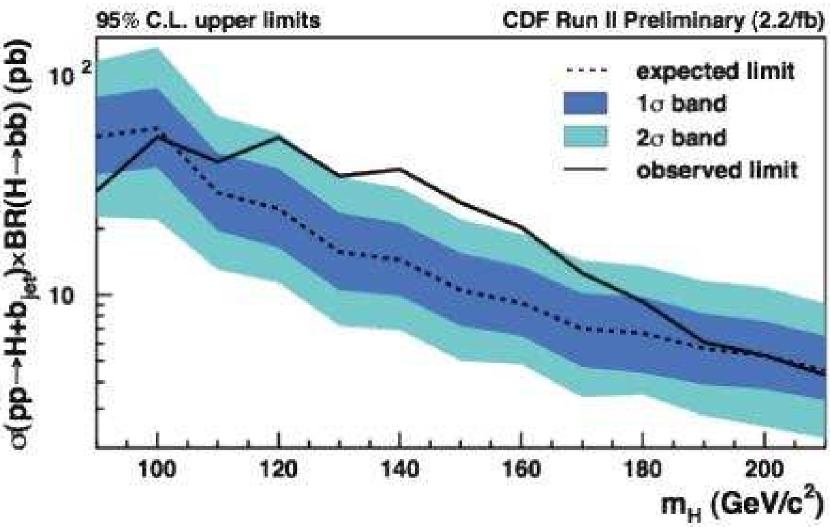
The logic was lost on my conservative MP who was duly elected into office despite my vote. Yesterday Sarkozy seemed to understand better, but what do the French think? Le Monde reports it without much comment, but at least one French science blog has a different perspective pointing to cuts at the CNRS and describing the speech as propaganda. I guess the address was not directed at them.

July 26, 2010: Tevatron Higgs Exclusion

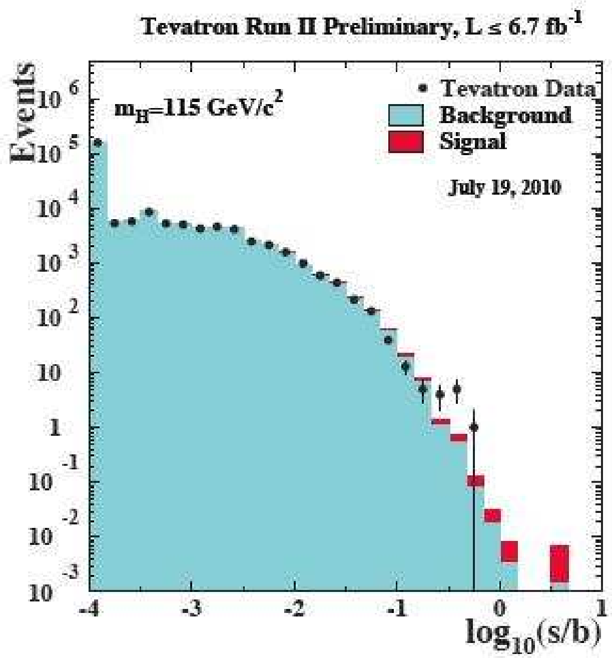
The combination of the CDF and DZero results previously described individually are now available. The main result is that there is an exclusion from 158 GeV to 175 GeV. This means that the ranges left for a Higgs are from 114 GeV to 158 GeV or from 175 GeV to 185 GeV. This will be described at ICHEP this afternoon by Ben Kilminster



As for the Higgs-plus-bottom channel, it shows an excess of just over 2 sigma in the range 130 GeV to 160 GeV. Very tantalising but also very inconclusive. A 2-sigma effect is normally regarded as no more than noise in the experimental physics community. They need 3-sigma to call it an "observation", and 5-sigma to call it a "discovery". This result is based on only 2 inverse femtobarns of data at one of the experiments. Why did they not show a combined result as they didi for the Higgs searches?

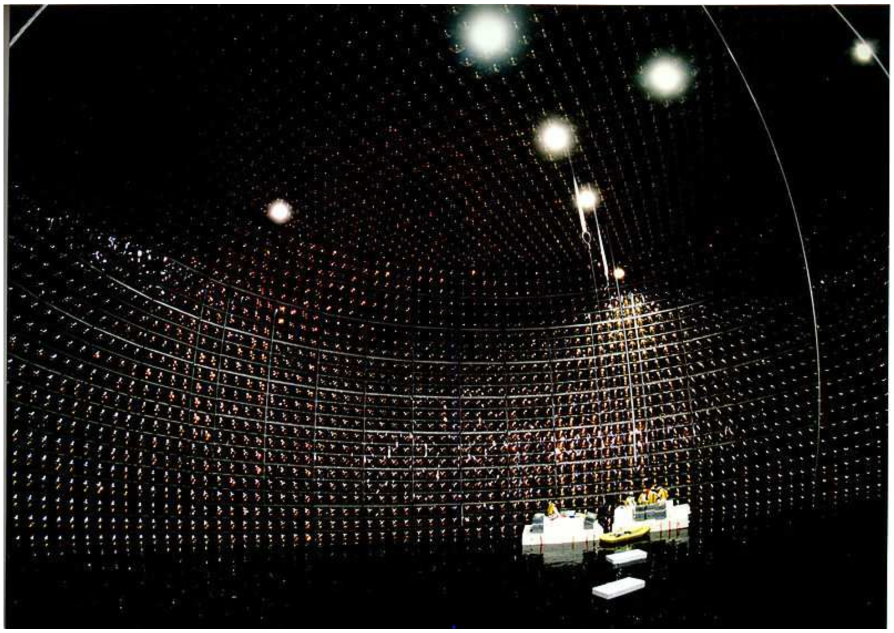


There is one last plot of interest that shows binned signals on a hypothesis of a Higgs at 115 GeV. This has a clear anomaly over two or three bins. Be wary to draw too many conclusions.



July 27, 2010: Super-Kamiokande & Nucleon Decay (ICHEP)

There has been a lot said about accelerator experiments and about neutrino beam experiments but now I want to put in a word for another important particle experiment. Super-Kamiokande started in 1996 and was an upgraded version of the original Kamiokande experiment started in 1985. It consists of a large tank of very pure water surrounded by a large number of photomultipliers to detect Cherenkov radiation from any interactions or decays in the tank.



Super-Kamiokande has had some spectacular success in detecting solar neutrinos and demonstrating neutrino oscillations, but its original purpose was to observe nucleon decays which are predicted by most grand unified theories. This type of experiment is unique in that it has a possibility to observe effects at the grand unified scale in non-cosmological context. Accelerators can not get anywhere near the energies required to probe this scale.

There were a couple of talks on Saturday at ICHEP about Super-Kamiokande: "Recent results on atomospheric neutrino oscillation from Super-Kamiokande" by Yoshihisa Obayashi and "Search for Nucleon Decays in Super-Kamiokand" by Makoto Miura. it will also be mentioned this afternoon in "Beyond the Standard Model searches" by Pavel Murat

It is well-known that Super-K has had negative results so far in its search for nucleon decay. This does not sound good but in fact this has been one of the most powerful results for theorists looking at particle models beyond the standard model. If ever a Nobel Prize was deserved for a negative result this would be it.

Super-K looks for two main decay channels for protons. The first is decay to electron plus pion, The second is to a Kaon and an anti-neutrino. Conventional GUT theories predict mostly the first mode, but supersymmetric models favour the second.

The first GUT theories used an SU(5) gauge group to unify the electroweak gauge theory with QCD. This predicted proton decay with a lifetime of between 3 x 10^{28} and 3 x 10^{31} years in the first mode. Super-K has set a lower bound of 7 x 10^{33} years, so this theory is long since dead.

SO(10) GUT can accommodate 1030 to 1040 seconds so its parameter space is much reduced but it still lives. SUSY versions of SU(5) are also ruled out by a 3 x 10^{33} limit on the second channel, while SUGRA SU(5) and SUSY SO(10) still cling to life.

In 2001 Super-K suffered a spectacular accident when a photomultipier tube imploded and stated a chain reaction of implosions spread by shock waves through the tank. Many expensive tubes were lost. initially the remaining tubes were redistributed and the experiment limped on as Super-K2. In 2006 it was fully restored and now it continues at full strength as Super-K3.

The real hope is that Super-K will see some positive results for nucleon decay. The parameters of the decays could then be studied in more detail to understand the GUT scale. Even if this does not transpire the possibility of ruling out more models makes Super-K a very worthwhile experiment.

July 30, 2010: Suzy at Last?

The first time I went to a lecture on supersymmetry the auditorium was so packed that many people could not get in. I was pleased I had anticipated the high demand and arrived very early. In his talk entitled "Is the End in Sight for Theoretical Physics?" The speaker explained to us that supersymmetry was the greatest hope for theoretical physics because it offered the possibility to unify the gauge theories of particle physics with a quantum theory of gravity in a way that might avoid the infinities of quantum field theory.

The speaker was of course Stephen Hawking and the occasion was his inauguration as Lucasian Professor in Cambridge. The version of supersymmetry that had him so excited was N=8 Supergravity in 4 dimensions. Cautiously he predicted that a complete theory of particle physics could be worked out in 20 years time using this new superunified theory.

30 years have passed and we know that things did not work out quite as Hawking has hoped. He thought that N=8 supergravity might be a unique candidate for a fully unified theory of physics, although the particles we now know as fundamental would have to be composite. He did not consider higher dimensional theories because he thought that details such as the number of spacetime dimensions could be explained by anthropomorphic arguments.

A few years later, supergravity was replaced by superstring theories and higher dimensions became mandatory. The underlying theory still possesses a similar uniqueness but now anthropomorphic arguments are needed to select the real world vacuum from a vast landscape of possibilities that superstring theory offers. Hawking has now retired as Lucasian professor to be replaced by one of superstrings' pioneers, Michael Green. Supersymmetry and superstrings face a skeptical backlash from a large section of the younger generation who are disillusioned by its failure to provide clear predictions for particle physics or cosmology after so much time.

Now the table may be turning full circle and this time support for supersymmetry comes not just from theory, but from experiment too. The version of supersymmetry that has come to the fore is the Minimal Supersymmetric Standard Model – an extension of the well established Standard Model of particle physics that includes an additional broken supersymmetry. This leads to one superpartner for every familiar particle that we know already, plus an alternative Higgs sector with fives Higgs particles, two of them charged.

The MSSM first appeared just a year after Hawking's lecture. Since its early days it has been understood that it improves the naturalness of low energy particle physics due to anomaly cancellations that help keep the Higgs sector light. With the addition of supersymmetry the three running coupling constants converge at one energy point, suggesting a dessert of new physics up to a more complete unification at the GUT scale. The model also provides a natural R-parity symmetry that would make its lightest particle stable. This offers a unique candidate for dark matter whose stability would otherwise be very hard to explain.

For the last decade or perhaps more, theorists have been anticipating the imminent discovery of supersymmetry in the world's highest energy particle accelerators. Fermilab was thought to have a chance of discovery with the Tevatron and there were even some false starts that faded away as the statistics grew. Now their hopes turn to the Large Hadron Collider but the Tevatron is not finished yet. In recent months we have seen some tantalising results reported by Fermilab that support the MSSM. Nothing is conclusive yet, but the combined evidence all seems to point in the right direction.

For those of us who grow up with the idea that supersymmetry is the final move in a game of unification that leads inevitably to a complete theory, these reports are too hard to dismiss. After the ICHEP conference we drool over the results that should have been shown, but weren't. Plots which show inconclusive signals of less than 3-sigmas statistical significance are quick and easy to approve for publication. They don't lead to big headlines. Anything above three sigmas would count as an observation and that puts it in a different league of results. With some history of failed observations from the past, Fermilab are likely to put off publication until the next round of data is seen to add rather than subtract from the result. For us the outsiders, the mere absence of certain plots starts to look like a sign to get excited about.

For the supersymmetry skeptics the conclusions to be drawn are different. Any signal below 3 sigma is to be dismissed as noise. They can even dismiss the exclusion of the Higgs mass range that now strongly supports a light Higgs sector as predicted by supersymmetry. It is indirect and still inconclusive.

If supersymmetry is indeed just below the surface, what will happen next? The Tevatron will continue to analyse the data they have while collecting some more until about 2013. The signal will grow until it is clear that something new has been seen. The LHC will not have the luminosity to see the low mass Higgs sector before the Tevatron, but supersymmetry will offer other new particles of higher mass. The LHC might pick out some of those very quickly and start to study their properties. Very soon the parameter space of supersymmetric models will be narrowed down. There will be a huge spurt of activity amongst theorists as they figure out how particle physics works at this scale. If there really is a desert of new physics beyond supersymmetry it may be possible to work out a convincing scenario for physics right up to the GUT scale. Possibly the next generation of accelerators will be needed to pin down most of the coupling constants. If they are clever enough, there may be enough information to figure out the mechanism for breaking supersymmetry at the GUT scale. That could reveal a perfectly supersymmetric world at higher energies with far fewer free parameters.

It will not stop there. If supersymmetry is part of gauge field unfication then its unbroken gauge form will include supergravity. The experimenters will have had their day again as theory pushes into higher energies with renewed confidence. How far it will run is hard to say but the connection between supersymmetry and quantum gravity is hard to pull apart. Knowing the details of supersymmetry at the electroweak scale could be enough to lead us to the end of theoretical particle physics in the sense that Hawking predicted 30 years ago. Perhaps even superstrings will suddenly look right again. Until we have the next results from experiment we cannot be sure, but that is what makes the current situation so exciting. In just a few years - perhaps even just months - a renaissance of particle physics merging experiment and theory might be well underway. It might pan out in a less predictable way than I have suggested here, but it is sure to be revealing, if it happens at all.

Update: see also the discussion on Lubos blog, and of course his many detailed pages extolling the virtues of supersymmetry.