

Strange Incident at CERN

Did the LHC Create a Black Hole?

And if so, Where is it Now?

by
George Paxinos
in conversation with
"An Iowan Idiot"

Telephone Conversation, Sunday, September 21, 2008, between George Paxinos (GP) and "An Iowan Idiot" (II) :

GP : Good Evening, II!

II : 'Evening, George!

GP : II, early yesterday morning my time in your own wee hours, you left a message on my answering machine saying you had expected something like Friday's (September 19, 2008) incident at the CERN Large Hadron Collider facility in Switzerland. A tonne of Helium apparently escaped from cryo-refrigeration for superconducting coil magnets. You had previously expressed an expectation of a potential vacuum leak. I remember you telling me this on the phone some weeks ago. Why were you expecting a vacuum leak?

II : Well, they were aiming at colliding very high energy particles together with the expectation by many theoreticians that unusual and exciting events might occur.

GP : What kind of events?

II : Well, they were expecting the creation of the long-sought-after Higgs Particle, believed responsible for the existence of mass, a possibility of Micro Black Holes being created, or even the unraveling of other entangled Higher Dimensions which we ordinarily do not perceive at energies below that which the LHC will now provide. In addition, some theorists are hopeful of the possible creation of "dark matter", a form of matter postulated to exist in order to explain away apparent discrepancies with the currently-enshrined Laws of

Motion and Gravitation in the observed orbital velocities of stars in nearby spiral galaxies seen partially edge-on, if we assume the distribution of mass in these spiral galaxies is roughly in agreement with the apparent visually-observed distribution of stars, dust and gas.

GP : II, I remember you explaining all this to me before and what the ramifications of the definitive determination of the Higgs Particle's existence would mean for established theory. But right now, I'd like to know what the creation of this Higgs Particle, Micro Black Holes or dark matter mean in the real world, specifically, what it would have to do with what might have happened at CERN on Friday – and especially your prior expectation of a Helium leak?

II : George, I'm not going to comment on the practical applications of the discovery of the Higgs Particle, which would be more of a boost to theorists wanting to confirm or tweak their existing theories, or of “dark matter” which again would be of great interest to theoreticians who would want to keep their existing theories in repute, but I will comment upon the creation of Micro Black Holes (MBH's) and the unraveling of Higher Dimensions.

GP : OK, II! -- and how do these last two items relate then to your expectations of a vacuum leak?

II : With respect to Black Holes, George, these have only been observed in the large at astronomical distances by inference from the behaviour of surrounding matter, and since we have to date never observed Micro Black Holes, there is no guarantee that if such or similar objects exist, they conform to the expectations of Stephen Hawking, General Relativity or Quantum Mechanics. In effect, I am saying that if MBHs or something like them exists, they might not be exactly as advertised. Also, if openings to additional dimensions were to occur, entry or exit or forces, matter, exotic forms of matter we have never experienced before, may be possible and could affect the nature, strength, terms of behaviour and life expectancy of MBH-like entities.

GP : But, II, tell me how on earth this could relate to leaks of vacuum or Helium?

II : George, if something like MBHs can exist, and if we could even create ourselves something like the Higgs Particle at the same time, a particle postulated to create Mass, then we have the possibility of MBH's being created with more mass than we imagine or behaving contrary to or persisting longer than the Hawking dogma expects. Remember, since we have never experienced MBH's before that we know of, since we have never observed them yet, Hawking's theorisation about them is only an idea, not a reality, hence speculative Philosophy, not Science. If we succeed in making things like MBH's, the Higgs Particle, and successfully open roads to energies from dimensions we ordinarily do not observe, the rule-book may be out, and the sky may be the limit.

GP : For Gosh' sakes, II! - please bring this down to earth!

II : George, if the theorists are excitedly hoping, like children at the Christmas Tree, they may find their presents, once opened, are far bigger and more dangerous than expected. Imagine a child asking his parents for a lizard, expecting a Gecko, but getting instead a Gila Monster? -- hardly safe to play with! What if they get a Black Hole, bigger, stronger and more persistent than predicted, perhaps buoyed up by flows of matter and energy from parts unknown (other dimensions), perhaps jacked up by images of a sequence of Higgs-like Particles. Remember, George, the Higgs Particle has not been observed yet either, and we cannot guarantee all of its properties except as an act of theoretical Faith. Now imagine that MBH, falling through the apparatus, on its way to the interior of the Earth, digging a larger tunnel than expected, opening the vacuum tube to vacuum loss and piercing not only the Helium Cryostat of a superconducting magnet, but even adding energy at a microscopic level to superconductive metal?

GP : OK! -- I can see that vacuum could be leaked by a hole made in the vacuum tube, and Helium leaking from a hole in a Helium vessel, but what about that energy added microscopically to superconducting metal?

II : OK, George, here's the Quencher : Infall of matter into a Black Hole is at this time regarded as the currently most efficient method of converting Mass into Energy. Some of that energy may be in the form of lower frequencies, but some will be in the form of penetrating

radiation entering a substantial distance into the bulk of the superconductive metal. This will add heat locally, causing some of the superconductive metal to become resistive, to have electrical resistance, converting current flowing through that region immediately into electrical power, generating more heat locally and bringing down more superconductivity in an avalanching manner which will quickly result in the tremendous energy stored in the magnetic field being dumped in a small region of a formerly superconducting magnetic coil which had been carrying enormous current. All that's required, George, is that these entities they hope will be created might behave in a more aggressive manner than they anticipated by theories unverified in this regime of experience.

GP : What do you mean by regime of experience?

II : Well, we are in a higher energy condition with the LHC than we have ever been before with a man-made scientific instrument, and any deviation from reality of our unverified theories for this realm of experience could prove trouble if they move in the wrong direction. You see, George, all that energy of a superconductive coil magnet can be dumped suddenly in a small region of that magnet's superconducting material, causing a sudden temperature rise, boiling off Helium, which, as it is warmed further, will expand, generating even more pressure, forcing Helium through any breach caused by any more persistent than expected MBH-like object falling and eating its way through the apparatus, making its journey to the interior of the Earth. That expresses the scenario.

GP : You mean, there will be both a vacuum and a Helium leak and as well damage to some superconducting magnets? Do I understand you correctly?

II: Yes, George, and that is why I hope that things go in the opposite direction to what they expect – i.e., that they do not create aggressive Higgs-like or MBH-like objects, nor do they temporarily open wide the doors of Hell (to other dimensions), as they hope and expect! I pray instead, George, that the faults recently occurring at the LHC involve only errors of human design, manufacture and operation!

GP : So you think that an entire tonne of Helium could have been lost through a microscopic hole?

II : No, because a microscopic hole would leak at a slow rate which would only drain a small section that could be isolated by remotely-closeable valves. In oil-refineries, there is an abundance of remote electronically-controlled valves, which can be activated by operators or automatically upon remote detection of unusual pressure, temperatures or gas leaks. Given its scientific sophistication and engineering finesse, why would a high-power outfit like CERN operate with less technological prowess than a simple oil-refinery??

GP : So do you mean ... do you think there is more than microscopic damage done?

II : Yes. I kind of expect that a few warps and cracks or at least failures of seals may have occurred due to uneven expansion of materials given highly-localised and intense temperature rises in affected areas. In fact, one news article on the Net claimed that at least 100 magnets had reached 100 degrees Centigrade or higher, which is to say a temperature rise of 370° C or above that of their cryogenic state before the event, which suggests to me something far more catastrophic than a microscopic hole, although such a hole might have been part of the triggering event.

GP : And what might have caused these warps or cracks?

II : For the warps, mainly sudden temperature changes in localised areas, and for any cracks and seal breaches, warps plus excessive pressure jumps.

GP : Why would there be pressure jumps?

II : George, while a Metric Ton of liquid Helium a few degrees above Absolute Zero (0° Kelvin or -273.16° Celsius), would occupy only a few cubic Meters, it would, if elevated to 0° Centigrade, occupy over 5'000 cubic Meters, and at 100°C would occupy over 7'500 cubic Meters of volume at Earth Standard, Normal Sea-Level Atmospheric Pressure. Clearly, under confinement, large pressure surges might have been expected before damage to pipes, valves or seals could occur, which damage could be expected, in turn, from a combination of local temperature and more general pressure surge, and which damage would result in relief of such excess pressure by venting

Helium into the tunnel. The fact that so much Helium leaked, suggests that either protective damage-control apparatus was less capable, or actual damage during the event was more extensive, than one would expect by the reassuring tone of the news releases. Methinks I smell a Hubble Space Telescope-Screwup!!

GP : So you think damage is greater, and repairs might take longer, than expected?

II : My personal gut feeling is that damage, from whatever cause, may be more extensive than they are willing to admit politically, and that the two-month cool-down period proposed as requirement before the instrument can start up again will provide a convenient cover during which extensive repairs could be made if required.

GP : Thanks, II! -- But what about the creation of a tiny, Proto-Universe, as was also mentioned, and as some pundits have feared?

II : George, those things are so far removed from experience, in service of maintaining the validity of theories such as Einstein's General Theory of Relativity, which we have never completely proven true, and to provide, in the form of the Big Bang, a quasi-religious belief which allows a possible explanation of the Red Shift of distant Galaxies' light which Hubble discovered in the 1920s, that I pay no credence to it whatsoever ...

GP : And if they were going to go for something adventurous ... I had heard they would first have to calibrate and de-bug the system over a period of several months, so then we can forget that ...

II : Perhaps, perhaps ... but then again, given the many scientists who have impatiently waited a goodly portion of their careers to get results from this device, and given the bad publicity they have been getting from Proto-Universe scare-mongers, they are not exactly going to tell us when they do go for the real thing either, are they? A case in point is the initially ill-fated Hubble Space Telescope. As it worked out, sharp pictures and good science were significantly delayed with the Hubble. But had, instead, the initial pictures been sharp and clear, I am sure that astronomical research and observation would have immediately been put into high gear. With the LHC, on the other hand, until the bad events of the week-end,

initial reports had been that systems were working great.

GP : So you think that because systems were green-lighted, they might have pushed things a little farther than they should have?

II : I don't know, George, but it's certainly an interesting thought! I know that if I were on the shake-down cruise of a mighty warship, I might be tempted to fire a cannon or a missile or two out of schedule ...

GP : So we might never know what really happened then?

II : Indeed! If corners were cut, if adventure was pushed, it might be concealed forever; we might never know.

GP : But why not talk about it, or let their staff talk about it?

II : YOU THINK IT THROUGH! -- What happens if they DID form a black hole, and it was growing bigger all the time, and is dwelling inside the earth now -- you think people would not WORRY about this? What the hell is it DOING down there?

GP : You really think people would worry?

II : The more so they would worry! -- You really think the researchers would go out and ADMIT this? -- the public might beat them to death!

GP : You think it might eat the earth away from its inside???

II : Possibly ... or it might be that there is some self-regulating mechanism determining how fast matter can get into such a small one, it might just choke up in the rush, like a crowd of people jammed together while trying to get through a door all at once. How do we know we don't already have a number of these in the interior of the earth? They might be responsible for the magnetic field of the Earth, rather than the bizarre eddy-current/self-activating dynamos which have been proposed by past geophysicists for the putative liquid metal in the Earth's core.

GP : You also said that the formation of a Mini Black Hole would be the least of our worries ... did you mean the Mini- or Proto-Universe,

and what if they were right, and they achieved the densities their theories tell them were the conditions just before the Big Bang?

II : Yes, that would be a concern if they could actually do it, if their theories were actually right ...

GP : Why? What would happen in that case?

II : Well, that universe would expand within ours, much like blowing a soap-bubble with a bubble-pipe and then blowing another bubble into the first bubble to expand within the original one.

GP : And that might displace some of ours? – while we are still IN it?

II : Well, the Big Inflation, a fix that was added to the Big Bang Theory to force a better agreement with Cosmic Background Radiation as it was perceived several decades ago, predicts the expansion of a Proto-Universe by a factor of 10^{100} times its original radius, within the first second of its becoming ...

GP : So that means ...?

II : The end, for us.

GP (At a loss) : You mean, if the scientists doing this are WRONG, then we LIVE, and if they are RIGHT, we DIE??

II : Maybe.

GP : But ... but this is like ... like the inverse of Russian Roulette! -- here we are not playing with one revolver chamber loaded and five empty, but with one empty and five loaded!?

II : Maybe. I'm only an Iowan Idiot, what do I know?

GP : Thanks for the talk. I think I need a drink!

II (Chuckling) : Have a good night, George!