

## **Barefoot Physics Against LHC Goliath**

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Four simple results, taken together, let the LHC experiment appear highly dangerous.. The thereby acquired popular interest has interfered with their scientific acceptance since the formation of a scientific consensus ordinarily takes longer.

It is their simplicity which makes the Tübingen results suspect in a time in which science grows ever more inaccessible. An awakening of young men easily kindles fears – much like the brave boat people do whose initiative is not recognized as the chance for the future of a continent grown senile.

The FIRST Tübingen result reads: The surface of a black hole (the so-called horizon) is always infinitely far away – even when one can fly around it.

The SECOND reads: Black holes are uncharged.

The THIRD: Superfluids offer no friction to fast-flying uncharged mini-particles.

The FOURTH: All quasars are rotation-symmetric Kleiner attractors.

In discussing the 4 points, let me go backwards since only the first is difficult.

Point FOUR means that just as in the cosmos, also in the earth “quasar formation“ (on a micro scale) occurs if a stable mini-black hole takes lodge. The consequence is the same exponential growth as it occurs with the two larger cousins – the billions of solar masses comprising “quasars“ and the just one solar mass heavy “microquasars.“ The alleged continuation of this hierarchy down the mass ladder is nothing but applied chaos theory.

Point THREE implies that neutron stars (which are superfluid) are not endangered by impacting mini-black holes born from cosmic rays colliding with terrestrial protons. In this regard, Rolf Landua of CERN on July 4, 2008 offered the prospect of a special experiment at CERN (where the largest amounts of superfluid helium world-wide are housed) in order to put this quantum feature to the test.

Point TWO (unchargedness) conflicts with the Gauss-Stokes theorem of electrostatics which states that the, on the outside perceptible, sum charge inside a closed surface cannot be changed by anything that occurs inside (in the present case: cannot be diminished through black-hole formation). The so far unproblematical link between general relativity and electromagnetism would be suspended. Something this far-reaching occurs only extremely rarely in science.

The burden of the proof now rests with the FIRST point. The Tübingen chaos school (Fröhlich, Kyupers, Kleiner, Argyris) has over the years published a few bits to the effect that sizes and distances change in proportion to the observed redshift, which remained unnoticed. Only when the result was successfully retrieved in the Schwarzschild metric – a recognized solution to the Einstein equation itself – did the current storm break loose.

Actually the result of a redshift-proportional relative rise in distance is well known. It only has fallen into oblivion for nine decades. Light ascending from the horizon is not just infinitely slowed in its frequency (redshifted), but also takes infinitely long to reach the outside world. In unison with this, light takes also infinitely long to reach the horizon from the outside world. That is, the “radar distance“ of the horizon from the outside world is infinite.

Where then lies the problem? In reality there is none. But a famous second result about black holes falsely exerts – as it were from the subconscious – an erasing effect on the former. It was discovered in 1939 by Oppenheimer and Snyder and states the following: Being an astronaut, one can drop into a large black hole in finite time! (And if on the horizon a sufficiently elastic trampoline were firmly suspended, one could rebound equally fast.) Hence everybody calmed down: All is normal again with the distance of a black hole, that one can circle with a spaceship as we saw or that if it were sufficiently small and manipulable one could even hold in one's hand. This re-gained belief in the effectively finite distance of the horizon from the outside world is unjustified, though.

The truth is that during each of the two elegantly covered legs of the astronaut's trip to a large black hole and back, an infinite amount of time is passing in the outside world! The contradiction explained reads: The clocks of the astronaut were infinitely slowed down! Igor Novikov puts it like this: "Radio waves will travel infinitely far to the gravitational radius [horizon] and will never return to the observer who sent them" ("Black Holes and the Universe," 1990, p. 24). And Kip Thorne says: "When an infinite amount of external time has passed, the [dropping] particle has experienced only a finite and very small amount of time" ("Black Holes and Time Warps," 1994, p. 292). This holds true respectively for either leg of the trip. If this were not so, the astronaut would be faster than light (he actually takes twice as long).

The described by no means new (only lost from consciousness) result entails three secondary consequences:

- a) The formation of the horizon of a black hole necessarily takes infinitely long in outside time until it is completely finished. Nevertheless most of the properties of a black hole (like blackness and immense distance) are reached in good approximation in a very short time.
- b) No radiation can escape in an effectively finite time from the neighbourhood of the horizon.
- c) Downstairs arrived charges are ineffective toward the outside owing to their large distance.

The described findings are unpopular. The attempt to publish meets with great resistance. An editor, after agreeing to publish, got removed from office (I hope only temporarily!), and the even unpartisan "arxiv" causes trouble accepting the preprint. CERN on the one hand let itself be prompted by the preprint's content to come up with assertions to the contrary (neutron stars would prove the experiment's safety) and to disclaim its own former belief in the possible formation of black holes, but on the other hand avoids any citation. Why this boycott of a new, old-as-the-hills finding?

It may have to do with the fact that the finding suggests that one can come up with an intuitive picture of what goes on around a black hole. And also, that new differential-geometric structures become mandatory (not just curvature but also relative stretching and compression, respectively); such a thing has not happened for nine decades. And also, that the connection to electrodynamics needs to be taken up again. Also, the existence of gravitational waves becomes questionable again and even the Big Bang would need to be rewritten. All of this only because the slowing of the wrist-watches of astronauts, in the gravitational twins paradox of the young Einstein, has dropped from consciousness? Although admittedly we here have to do with the most beautiful example ever: infinite age difference after the return of the lost twin brother.

Only now quite at the end follows the connection to the planned Large Hadron Experiment at CERN: The new unchargedness of black holes means that the familiar charged "point particles" (like electrons) cannot be maximally compact, since they would then be uncharged, but rather must be string-shaped (with a hole or more). Hence "strings" would

already exist! Mini-black holes would then all of a sudden be nothing exotic any more: The probability of their arising in the LHC would increase dramatically. In addition, the unchargedness would make their natural cousins generated by cosmic-ray protons in the atmosphere) innocuous: so not only to the earth and the sun but to all celestial bodies (including neutron stars owing to a special quantum effect as we saw). Only the ultra-slow human-made black holes would remain dangerous. Such a “conspiracy“ of nature against the human species – that a single result fallen into oblivion should entail a whole cooperative bundle of dangers hidden from view without it – appears almost infinitely improbable a priori.

A proverb says that it is through thinking that all the errors arise. The return to Einstein’s “mulling“ is an extraordinarily taxing task. Only young human beings (and age-old ones like the late John Argyris) have a chance. This gives me the courage to herewith ask the young scientists of the third world to support the request for a scientific safety conference on the LHC experiment (requested on April 18, 2008) with a proclamation. A few days ago I got invited by a scientific journal from their midst to submit my paper to them. That was the greatest honor I can imagine. For science is friendship. It is the opposite of war as long as it is not misused.

As the official location of the meeting, I again suggest the summer residency of the pope.

Summary: It is possible to do physics with mental images. Einstein called this “Grübeln“ (mulling).. In the time since, so many purely formal results have been accumulated that a “return to the images“ is vital. The current LHC crisis – that “faits accomplis“ are being created before a theoretical consensus regarding safety has been achieved – shows that the turnabout in thinking is essential for survival. The simplicity and the enchantment of a youth-supported “barefoot physics“ is called for. For J.O.R.

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