

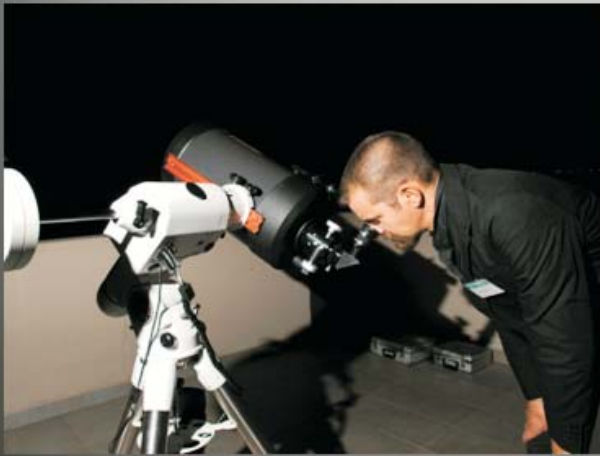


THE GRAVITATIONAL VOICE

number 13

NOVEMBER 2009

*Researchers Night - 25 September 2009*



**NEWS FROM THE SITE**

Virgo and Earthquakes  
Climate evolution in Cascina

**NEWS FROM THE WORLD**

Where is Atlantis?  
The Guardian of Nothing (Last Part)

**LIFE IN CASCINA**

Is EGO in danger?  
EGO Virgo League 2009

News from EGO and VIRGO



"h - The Gravitational Voice" is an internal publication of the European Gravitational Observatory (EGO) and the Virgo Collaboration.

The content of this newsletter does not necessarily represent the opinion of the management.

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## EDITORIAL

This editorial is dedicated to those who, day by day, keep Virgo in excellent shape: the commissioning team and its necessary complement: the operator team.

We would like to congratulate and thank all of them for the tremendous work they have undertaken in preparing Virgo for a data taking run with excellent sensitivity and duty cycle. This is the first time that the probability of capturing a genuine GW event, in one year of data, will be small, but not negligible.

In addition, since the VSR2 run started, they have not at all slowed down their effort: they continue to train Virgo and possibly to improve its performances.

The trigger for these comments was a recent episode demonstrating once again the dedication and the reactivity of these people. One Thursday night the laser of the North Input Thermal Compensation System burned, due to a leak in the cooling circuit. The day after, the failure was reported at the daily meeting, together with, in the main, unsuccessful efforts to keep the interferometer working satisfactorily for the coming weekend. A frustrating situation, considering the existence of a spare laser at Roma Tor Vergata, waiting to be transported to the site the following Monday. At this point everyone automatically started looking one another straight in the eye, looking for volunteers to quickly solve the situation. In a few minutes Federico Nenci and Roberto Cavalieri started warming up the engine of the EGO Doblo' and left the site, due south. The others made detailed plans to rapidly put the new laser into operation. A little after midnight of the same day the replacement instrument was in Cascina. After a full day of installation and tuning by Julien Marque and Richard Day, on Saturday night the interferometer was once again taking data in satisfactory, even if not quite perfect, conditions.

The capability to have such prompt reactions makes us confident in a successful future.

C. BRADASCHIA

Cover Page:  
Photos taken by M.D'Andrea during the Researchers Night held at EGO site on September 25th.

## Earthquakes and Virgo

**Entering the control room it is** not uncommon to see one of the (almost) ever-running software write a banner on the big central screen – an old-style banner in which each type is made by small asterisks – with the message: “EARTHQUAKE !!”, repeated every minute for a period that can be also one hour. It simply reports that Virgo is sensing the displacements induced by a strong and distant earthquake, typically of a magnitude between 5.5 and 7 at a distance of more than 5-6 thousand kilometers. There is not an analogue message for medium and strong earthquakes that are nearer: they suddenly unlock the interferometer and so there is nothing to be warned of. The expression “unlock” is a slang word that refers to the end of the standard working condition, which needs at least half an hour to be recovered.

But there is a peculiar behaviour of the locking robustness with regard to the intensity of the medium-/high-energy earthquakes depending on their distance from Virgo.

Let's consider two different classes of earthquake: magnitude 7 in the Pacific Ocean (distant and strong) and a magnitude 5 in the Mediterranean region (close and medium). The energy arriving on site would be expected to be more or less the same, but the effect on Virgo is really different: the former one unlocks the interferometer and makes it unusable for about 2-3 hours, while the effect of the latter is short and less critical for the working condition.

To understand that, we have to know the nature of the various seismic waves.

First of all there are the **body** waves, which propagate in all directions inside the earth. They divide into fast (about 10 km/s inside the mantle) **primary (p)** waves and slow

(about 5 km/s) **secondary (s)** waves. When an earthquake occurs in a certain site, called the hypocenter, s- and p- waves are simultaneously generated but, because of their different speed they are detected as two separate events and it's for that reason that they are called primary – the first to arrive – and secondary ones. Incidentally this fact is used to determine the distance of the earthquake from the detection station and, with multiple site measurements, to determine the exact location of the hypocenter). Their effect is the one we are used to imagine: a short shock, mostly composed by relatively high frequency vibrations (above 1 Hz). The Virgo suspension system is quite efficient in rejecting this kind of disturbance, and in most of the cases the lock survives. Their energy decreases with an inverse proportionality to the square of the distance. It means that distant and strong earthquakes have the same effect as weaker and closer ones.

Secondly, there are **surface** waves. They are originated by p- and s-waves when they encounter the surface of the earth. They propagate only along the surface and they are slower (about 3 km/s). Their energy

decreases with an inverse proportionality to the distance (not the square), and the main component has a very low frequency (50-70 mHz). This means that they can propagate far further than the body waves, making also many turns of the earth. If the earthquake is strong enough, after a few tens of minutes the whole globe is a single oscillating surface. The displacement of the ground can reach hundreds of microns. In those cases the distance of the hypocenter is not a very relevant parameter.

The duration of the phenomenon is not the same as the original event, but much longer. It decays with an exponential low and ends when all the energy emitted at the beginning has dissipated.

The Virgo suspension system is less efficient for this kind of disturbance, mainly due to the tilt component of the oscillation, for which a specific sensor is missing.

This is what happens when a strong earthquake occurs: the minutes after the body waves has passed, if we are lucky and the lock survives, the system begins to sense an increasing oscillation at low frequency, which

### Surface Wave

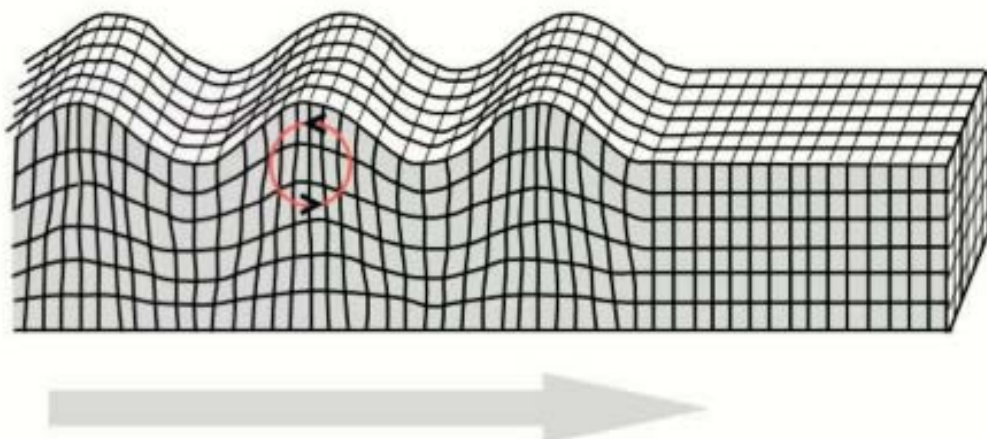


Fig. 1: Typical propagation of a surface wave causing tilt on the earth surface

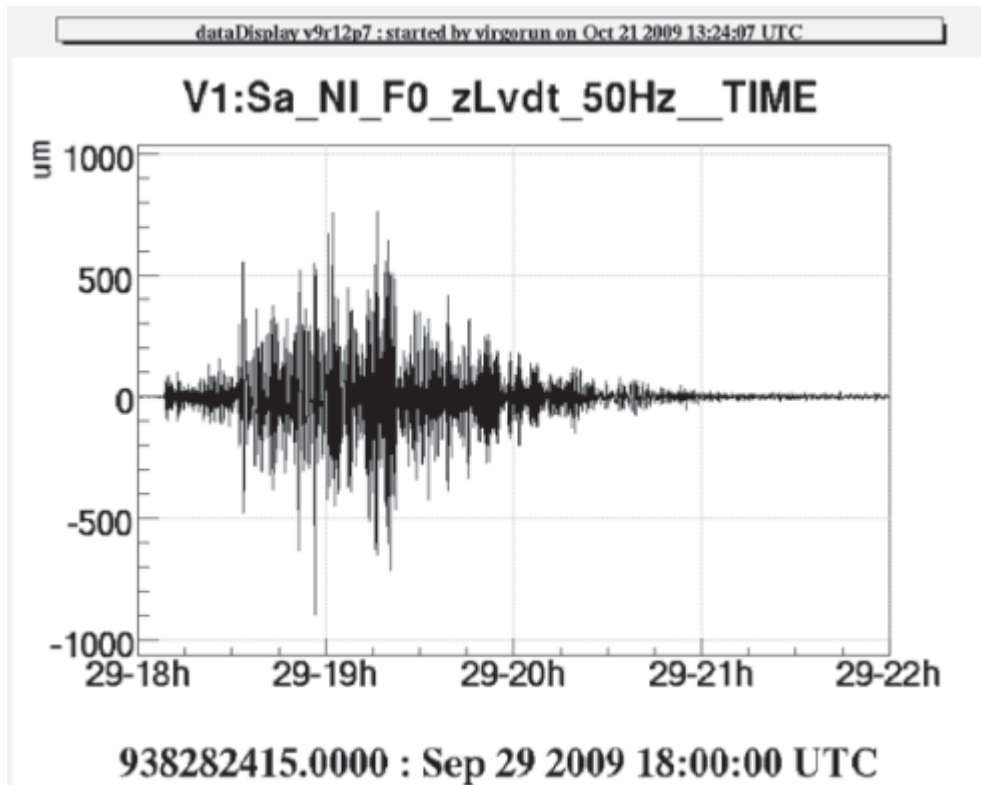


Fig. 2: Magnitude 8 in Samoa - Displacement of suspension top stage

can be easily recognized as “EARTHQUAKE!!”. The message is displayed, and we have time (not too much) to perform some desperate action (but usually we do nothing, just waiting for the unlock, or the end of the storm).

E. CAMPAGNA and P. RUGGI

## Climate evolution in Cascina

Climate is the long-term statistical expression of the short-term expression “weather” and defined as “expected weather”. When changes in the expected weather occur, we call these climate changes. They can be defined by the differences between average weather conditions at two separate times. Climate may change in different ways, over different time scales and at different geographical scales.

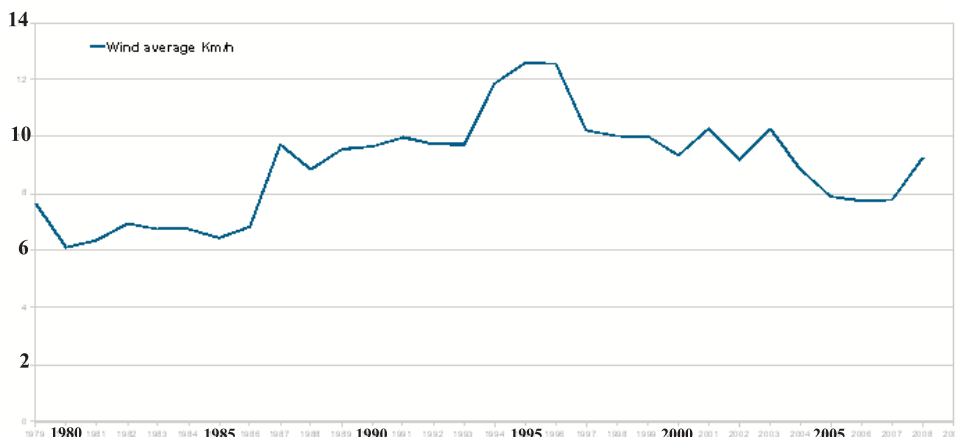
Just as weather changes from day to day, so climatic conditions vary from year to year. One year may be

cool and wet, the next warm and dry. Such year-to-year variability in climate conditions may conceal

gradual trends from one type of climate regime to another. To study these trends, information on the weather must be collected over many years.

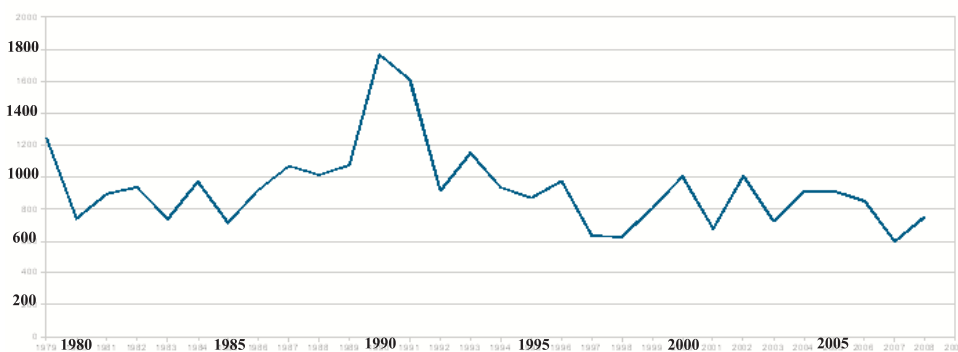
Usually, climatic averages of the common weather variables, such as temperature, rainfall, sunshine and atmospheric pressure, are calculated over a 30 year period (the case of this study).

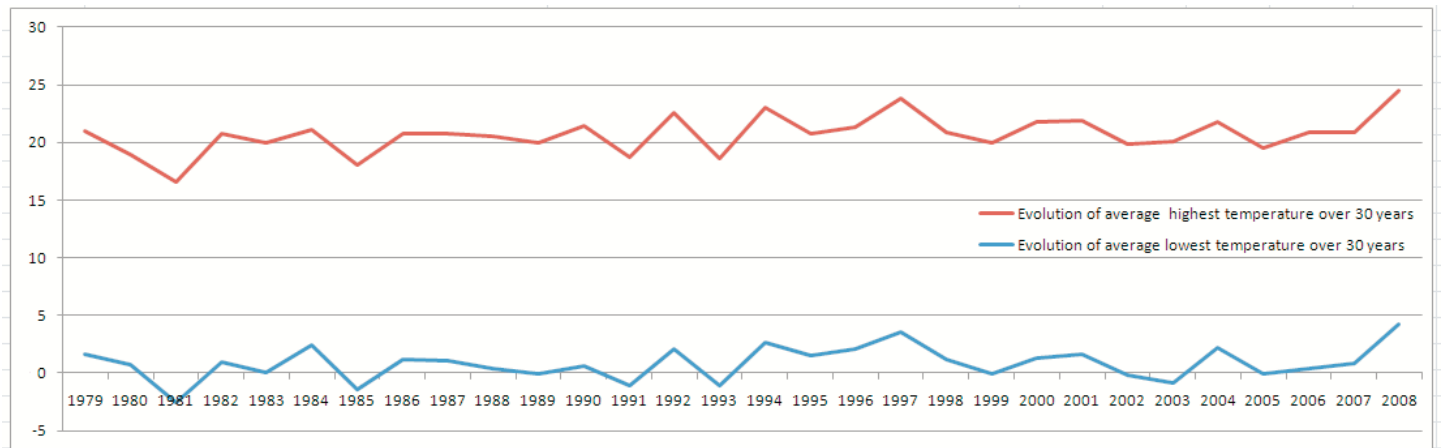
Information on the climate evolution in the Cascina area could be of interest for Virgo. Therefore I decided to retrieve 30 years of weather data collected from meteorological stations situated in Cascina and recorded on suitable and reliable web sites (e.g. <http://www.ilmeteo.it/portale/archivio-meteo/2009/Settembre>). Then I compiled them and concentrated on the evolution of wind, rainfall and lowest-highest temperatures. You can find the results of this compilation in the different graphs presented hereafter.



Graph above: Annual evolution of the average wind speed over the last 30 years in the Cascina area.

Below: Annual evolution of the average rainfall over the last 30 years in the Cascina area.





*Evolution of the annual highest - lowest temperatures over the last 30 years in the Cascina area.*

From the observation of these graphs, we can draw some conclusions:

**Wind evolution:** We have a net increase in the average wind speed, with a particularly violent episode in 1995. This finding pushes me to explore more thoroughly the evolution of gusts of wind, and their distribution over time because this weather phenomenon can have serious consequences on the functioning of the interferometer. The results of this further investigation may be published in the future.

**Rainfall:** Contrary to what one may think it seems we are moving towards a drought, or at least to a marked decrease in rainfall. We note however that there were very violent episodes during the years 90-95.

**Lowest- highest temperatures:** It seems that we are witnessing slow low temperatures rebounding particularly during the years since 1995.

D. TROSZEZYNSKI

## Researchers Night at EGO site

Astronomical observations by G.Vajente

It was a windy night out there on the top of the technical building, as

it often is on the Cascina plain. But this was not enough to dishearten those hundred people who came to peek inside our telescopes and get a glance at the stars. The public was really heterogeneous: many small children with their parents, high school boys and girls, simply curious adults. All of them caught the occasion to have a different look at the night sky and to learn a bit more about it. We had very good feedback from all of them, many questions were asked, and we did our best to answer all of them. But nothing is more rewarding than the wondrous exclamations of the children. Let's hope we have inspired some more curiosity in all of them!

Five instruments were mounted on the terrace on top of the new technical building and they were representative of all kind of telescopes: an 8 cm diameter refractor, an 11.4 cm *Newtonian* reflector, two 20 cm *Schmidt-Cassegrain* catadioptrics and one 26 cm *Maksutov-Cassegrain* catadioptric. The help of the Pisa amateur astronomers group (*Associazione Astrofili Galileo Galilei*) was crucial to the success of the event.

The observations were inspired to Galileo Galilei's first steps in

discovering the sky. As he did 400 years ago, we pointed our instruments at the moon and the largest planet of the solar system, Jupiter.

The moon was in an advanced first quarter, which is the best moment to observe it. Along the line that separated the light and dark side (the *terminator*) the shadows of mountains and valleys were clearly visible. Unfortunately the moon set around 11 pm, and the last group of visitors was not able to see it. Jupiter was also a remarkable sight with our instruments. The four main moons (Io, Europa, Ganymede and Callisto) were visible, aligned around the main disk of the planet, which showed at least a couple of its equatorial bands.

The second edition of the public observation was also quite a success.





This time we had more instruments (a second refractor and a big binocular) and we were organized into two sites: one again on the top of the new technical building and a second one behind the main building. We were really lucky concerning the weather: it was cloudy until the day before. But in the end the conditions were quite good and it was also possible to see hints of the milky way pattern in the sky.

Our instruments were pointed again at Jupiter and the moon, but also to some deep sky objects, like the Andromeda galaxy (M31) and the Pleiades (M45). But again the sight that people liked the most was the moon.

### Science Café by C.Bradaschia

**The autumn of 2009**, the International Year of Astronomy, is dense with events. Among them, “Guardare il cielo e dialogar di scienza” (Observe the sky and talk about science) deserves a little report. It took place here at EGO, on Friday September 25 and was repeated on Saturday October 24,

on the wave of the success of the first edition.

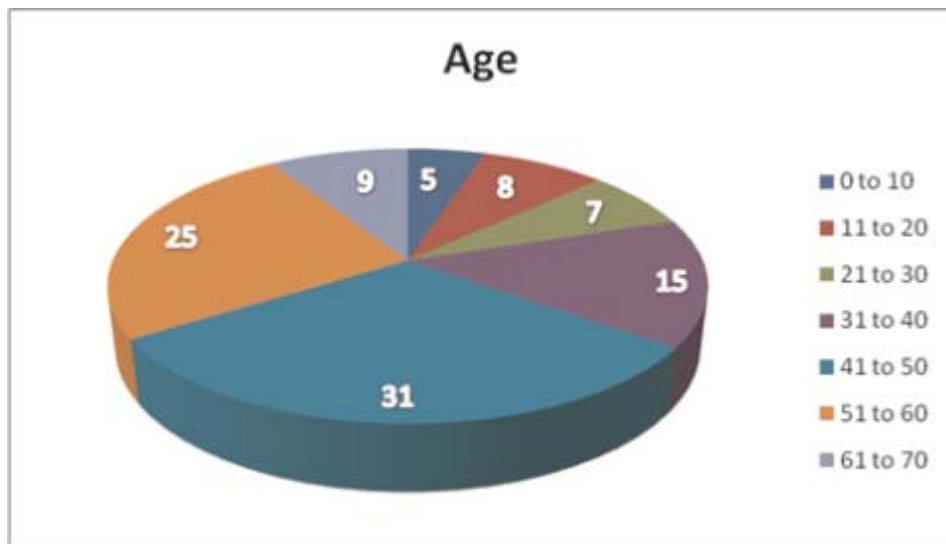
The September event proved the reactivity of our group: it was decided and organised in less than two weeks. The reason for the rush was the false announcement made by Regione Toscana of a popular astronomy event for that night, based on a misunderstood agreement with Limonaia and the Physics Department. We were called in as “lifesavers” to host the event and we did our job. We assembled, in a few days, a crew of astronomers and a good set of telescopes, as described by Gabriele in the previous article. On our side we decided to realise an idea that we have had in mind

for a long time: a “Science Café”, where scientists and visitors could have a drink together and freely discuss science. The Café was well organized thanks to the EGO staff and to the tables supplied by INFN. It was nice, but not as nice as we hoped, probably due to the natural inclination of visitors to stay among themselves. Researchers also could have “offered” their science more openly. In the second half of the evening the ice melted and many left the site at midnight with sparkling eyes.

The overall outcome was strongly positive: we continued receiving phone calls until the time we announced the second event, having been obliged after only a few days to stop taking further reservations, having rapidly reached 100!

The October event was also successful, even if, contrary to September, we had fewer visitors than reservations: 75 out of 100. It ran more smoothly, thanks to two telescope sites and the assignment of a tutor for every group of 24. Other useful novelties were the posters supplied by Aspera for the European week of Astroparticle Physics and the cosmic ray telescope borrowed from INFN.

We distributed participation forms to the visitors and more than 50% of them were completed; this allowed for a little statistical study. We had ages ranging between 8 and 68, distributed as shown in the pie diagram:





## GUARDARE IL CIELO DIALOGAR DI SCIENZA

Venerdì 25 Settembre 2009  
dalle 21 a mezzanotte

Osservatorio Gravitazionale Europeo  
Via E. Amaldi, Santo Stefano a Macerata, Cascina

Scheda di partecipazione

The question: "Are you satisfied by the answers to your questions?" gave the following result, which is quite satisfactory indeed:

Answers	Sept. 25	Oct. 24
Yes	17	31
Very much	18	5
Much	2	2
No answer	14	11

Among all the forms we picked out the last one of September, number 97, as an example to be shown to our readers; it is funny and provides us with a sensation of familiarity and ambiguity contemporarily. Will our readers help us to understand this contradictory double feeling? Also, from the second night, we got a surprising suggestion: "it would be advisable to exclude children, as they make difficult to keep paying attention".

The photos (taken by M. D'Andrea) show the visitors relaxing at the Science Café and discovering the Control Room.



Professione

Reddittiere

Età

35

Nome (facoltativo)

Federico Ricciardi

Le mie domande

Ci rifletto, dopo te lo dico.

Le risposte sono state soddisfacenti?

Il Caffè della Scienza: mancava il caffè!!!

Consigli per migliorare i prossimi incontri

Complimenti al Professore Bradaschia, ma non ho capito niente alle sue spiegazioni

Scheda n. 97

spiegazioni

EGO European Gravitational Observatory

English translation:

Profession: Living on my inheritance

Age: 35

Name (optional): Federico Ricciardi

My questions: I am thinking about it, after I will tell you.

Were the replies satisfactory?  
The Science Café did not have any coffee!

Suggestions for improvements at the next presentations?  
Compliments to Professor Bradaschia but I did not understand anything.



## I propose a curious excursion...

I was recently asked by Roberto Cosci to proof-read a document written by his father, Marcello. Marcello worked for many years at the University of Siena and became a renowned expert in the use of satellite imaging in the identification of sites of important archaeological interest, so it was with some interest that I agreed to help.

My interest was soon rewarded. While many of the documents I am asked to proof-read are staid, technical affairs, the subject this time was none other than the location of the lost city of Atlantis, and it turned out to be absolutely riveting reading. At times while reading it I felt like Professor Aronnax following Captain Nemo, who, of course, has already discovered Atlantis, aboard the Nautilus. As such, I proposed the idea of including the document as a two-piece article in *h*, the first part this issue and the second in the next, so that it may be digested and considered by our learned audience too.

Sadly, Marcello Cosci passed away at the end of September, following a long illness, at the grand old age of 80. Roberto is determined to support and follow the work that occupied so much of his father's time in recent years and that is now beginning to bear fruit. Based on his studies, a team departed on the 26th of October for the location identified in his work, in order to examine the area in situ and make preparations for a larger mission in January. Roberto will provide us with information on how things are progressing in the future, and you can also keep track of developments on the dedicated Facebook page (<http://www.facebook.com/pages/Marcello-Cosci/158805717124?ref=mf>).

In the meantime, make yourself a cup of tea, sit back, relax and enjoy reading about the story of how

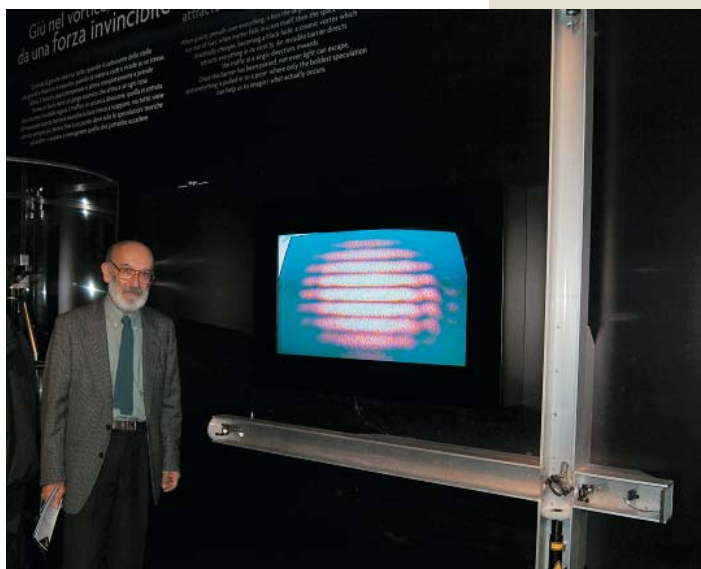
## Astri & Particelle

This is the title of an exhibition about Astroparticle Physics organized by INFN, INAF (Istituto Nazionale di Astrofisica) and ASI (Agenzia Spaziale Italiana) at Palazzo delle Esposizioni in Roma from 27/10/09 to 14/02/10. Virgo contributed with a full payload (an old one) equipped with a fake aluminum mirror and a model interferometer with 2 m long arms.

I was present at the inauguration on October 26, together with Elena Cuoco, Maurizio Perciballi and Michele Punturo. The whole exposition including our pieces is very impressive. All the exhibits, including ours, are very impressive; but the emphasis has been placed more on show than on scientific education.

C. BRADASCHIA

*All the employees and the associated people of INFN and INAF as well as employees of ASI will benefit from a reduced ticket price upon presentation of their institute badge or of any attestation by the employer certifying the person belongs to or is associated with INFN/INAF or ASI. This should be accompanied by an ID. The reduced ticket price will be 7,50 Euro instead of 12,50.*





Marcello used the classics as his point of departure and the potentially ground-breaking discoveries he made.

G. HEMMING

## From the satellites the first images of the mythical Atlantis

(Part 1)

by Marcello Cosci

**The exciting question of Atlantis**, considered one of the most impenetrable mysteries of archaeology, has involved generations of researchers through centuries, in an ambitious attempt to provide an answer to the problematic location of the mythical city-island. The island presumably disappeared because of earthquakes and floods in the late bronze-age, somewhere in the Atlantic Ocean. Initially more attracted by the charm of Plato's story than by its reliability, I extracted the most meaningful passages, hereafter reported in italics, eliminating the insignificant ones. A careful analysis and interpretation of the selected extracts has enabled the possibility to highlight certain significant passages of the text:

1. Atlantis was situated outside of the Pillars of Hercules in a remote part of the Atlantic Ocean.

2. The empire of Atlantis was based on a principle island (the sacred island centre of the empire). From there Atlas and his brothers also governed many nearby islands as well as parts of the continent, Lybia up to Egypt and finally the colonies founded in Europe and in Etruria.

3. The island was uniformly flat with an elongated shape, the longest side exposed to the south. The presence

of numerous elephants and the flora and wildlife described by Critias (one of Plato's dialogues - [http://en.wikipedia.org/wiki/Critias\\_dialogue](http://en.wikipedia.org/wiki/Critias_dialogue)), are characteristics of a tropical climate.

4. The hill sacred to Poseidon and Cleito had been surrounded and defended by three concentric moats (sea circles) and a canal connected the metropolis and a vast port area to the sea.

5. For generation after generation the Atlanteans built on the hill "a residence so extraordinary to see, for its grandeur and the beauty of its works". Some buildings were made of stones of different colors - white, red and black - extracted from the subsoil of the central island.

Despite the fact that, after centuries of intense searches, any further attempt to discover the foundation of the mythical story would probably fail, I was however convinced that, with the help of modern technologies and of increasingly sophisticated investigation methods, further information could be brought to light. The study of aerial photos and satellite images is an increasingly

used means of investigation for archaeological searches.

When carefully analyzed, they can provide hints as to the presence of buried traces of human activities. Nowadays every place on Earth has been photographed and recorded by satellites, providing digital images of very high resolution of features at ground level.

Unlike earlier researchers, we can use today an extraordinary investigation tool available on the

Internet: Google Earth.

For economic reasons, the images are available in a low resolution, enabling only a simple first approach. However, such images are recorded with a wide range for brightness that facilitates, for those who possess the capacity to perceive the traces, the recognition of those nearly imperceptible signs that point out the presence of buried remains of human activities.

As a consequence, I first chose to carry out a careful morphological investigation of the numerous islands (about a hundred) situated along the vast Atlantic coast of Africa. In spite of limited analysis possibilities provided by Google Earth, and thanks to patient investigation, it has been possible to recognize (among the numerous islands investigated) an island presenting many affinities with the characteristics of the mythical island described by Plato, except for its dimensions. This island is Sherbro: uniformly flat and its longer side exposed to the south. Situated near the African western coast, in front of Sierra Lion (Fig. 0), it occupies a surface of 670 Km<sup>2</sup> and its dimensions are around 50x27 Km (Fig. 1, next page).



Having undergone volcanic activity, in undetermined eras, it presents outcrops of metamorphic rocks made of typical formations such as granite and red sandstone (necessary for the said colored buildings). Recoveries of prehistoric utensils made of stone as well as of numerous statuettes of various dimensions sculpted in soapstone called Nomoli have been signaled.

*Timaeus 24e*

*"In fact the writings say how great was that power...that invaded all of Europe and Asia at the same time, arriving from beyond the Atlantic Ocean."*

*Critias 114a*

*"(Poseidon) after having divided the entire island of Atlantis into ten parts, gave the first born of the two eldest the mother's residence and its surrounding land [...] and he made him king of the others. He made the others chiefs and to each one he gave power over a great number of men and a vast territory. He gave names to all and, to the who was the eldest king he gave this name - that is that which is the name of the entire island and the sea, called the Atlantic - because the name of he who first reigned was, of course, Atlante."*

*Critias 114c-114d*

*"All of them, both themselves and their descendants, lived here for many generations, exercising command over many other islands of that sea, and further, as previously stated, governing regions further afield, as far away as Egypt and Tirrenia."*

The Google Earth images, analyzed with the computer using operations that highlight the existing physical discontinuities in the mass of the closest subsoil, have reported the presence of geometric traces of

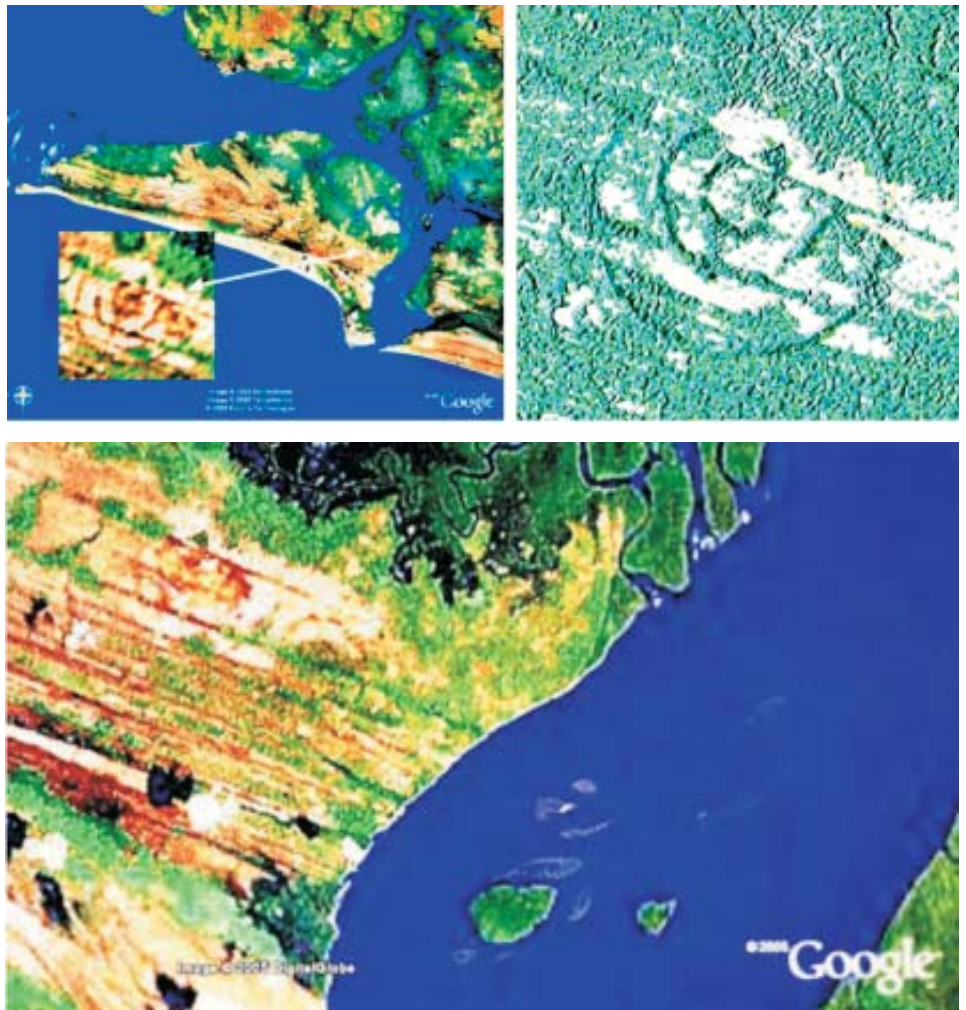


Fig.1: Sierra Leone – Island of Sherbro (images taken from Google Earth). Copyright ESA distributed by Telespazio s.p.a. Rome

damp, the surfaces of which, rising up in capillarity, draw the mirror image of three ample circular and concentric moats (Fig. 1).

*Critias 113d-113e*

*"Poseidon, having understood her desire, joined the girl in union and fortified the hill in which she lived. He made it steep all around, forming alternate belts of sea and earth, some smaller and some larger, one around the other, two of earth, three of sea, as though he worked a potter's wheel starting from the centre of the island, everywhere at equal distance, in such a way that the island became inaccessible to man: in fact, at that time neither boats, nor navigation existed."*

The stimulating results achieved so far, even if only partial, have strongly encouraged the hereinafter of the

research and consequently the purchase of suitable satellite images. In this case the greatest difficulty has been to choose, among the images in the archive, those recorded in the correct seasonable period. In fact the buried remains manifest themselves only with particular conditions due to the degree of damp or dryness of the ground correlated with the depth of the buried traces and with the type of vegetation, which in turn can favour or not the formation of anomalies. Among the various commercial platforms currently in orbit, the Landsat 7 ETM has been selected and an image endowed with 7 spectral bands with the geometric resolution of 30 metres, has been taken.

With the elaboration of the original image, the first result achieved is the recognition of the geometrical



Fig. 2: Landsat 7ETM image – bands 1-2-3

shape of the island, which is very similar to Plato's description (Fig. 2). The western coast of the island is also clearly visible in this image, partially submerged by the ocean, which was not visible in the first image in Fig. 1 because Google technicians had to change the color of the seas and eliminate important information to join the images all together.

*Critias 118a-118b*

*“Flat and uniform, all stretched, three thousand stages in length on the two sides and two thousand in the centre from the sea down there. This part of the entire island faced southwards and was sheltered from the northern winds.”*

*Critias 118c*

*“It had, as I have already said, the form of a stretched quadrilateral*

*and was upright for the most part...”*

Despite its geometrical resolution, limited to 30 meters, the elaboration of spectral bands 3-2-5 and 1-2-3 has highlighted the big archaeological structure, 108 hectares wide, composed of metropolis and a big circular shaped harbor area with a surface of about 84 hectares (fig. 3, fig. 4).

**TO BE CONTINUED ...**

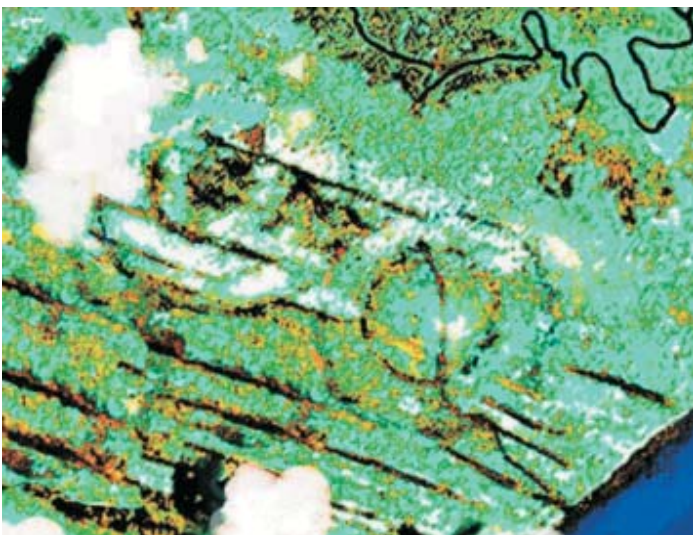


Fig. 3: Landsat 7ETM image – bands 3-2-5

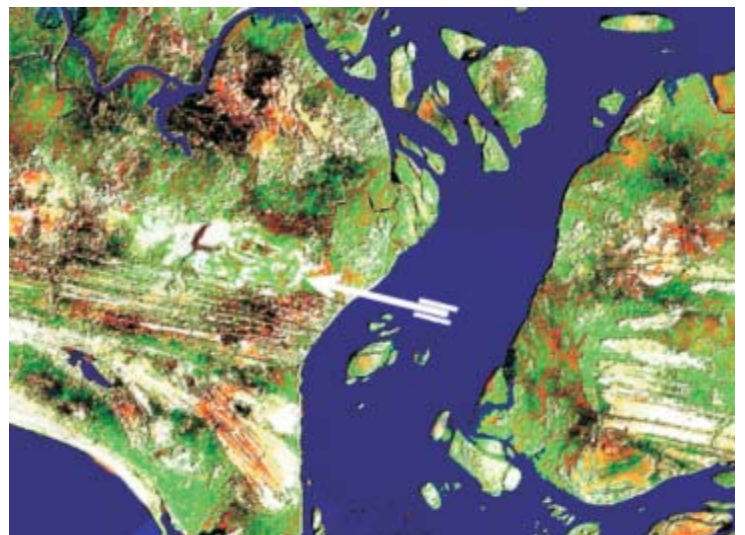
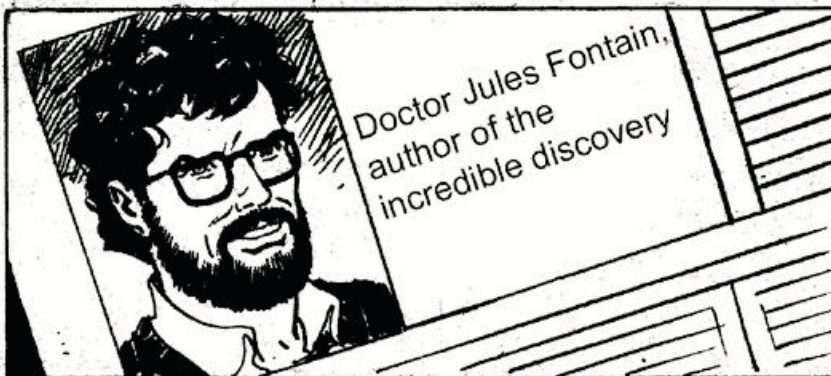
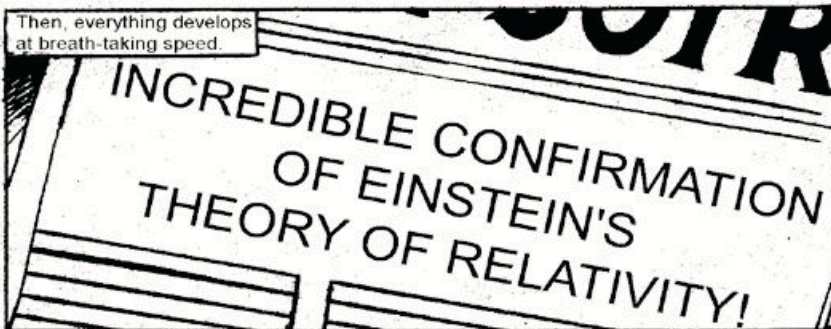
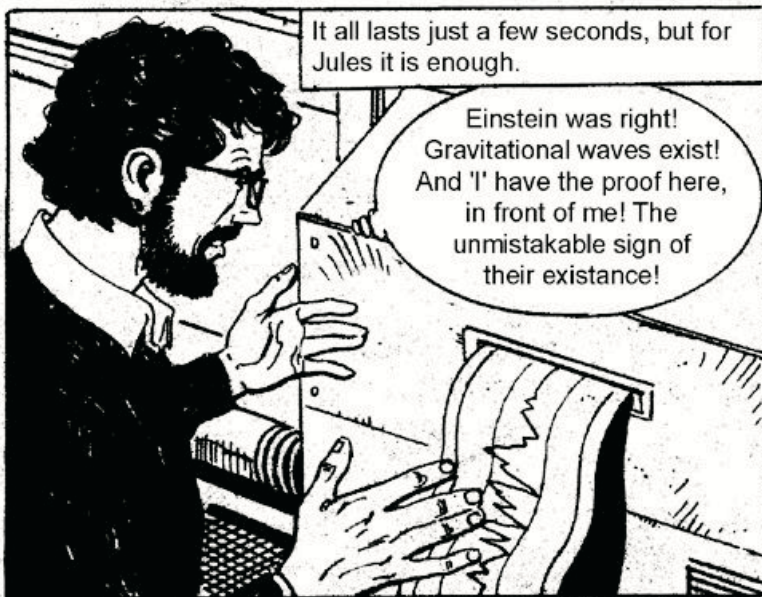
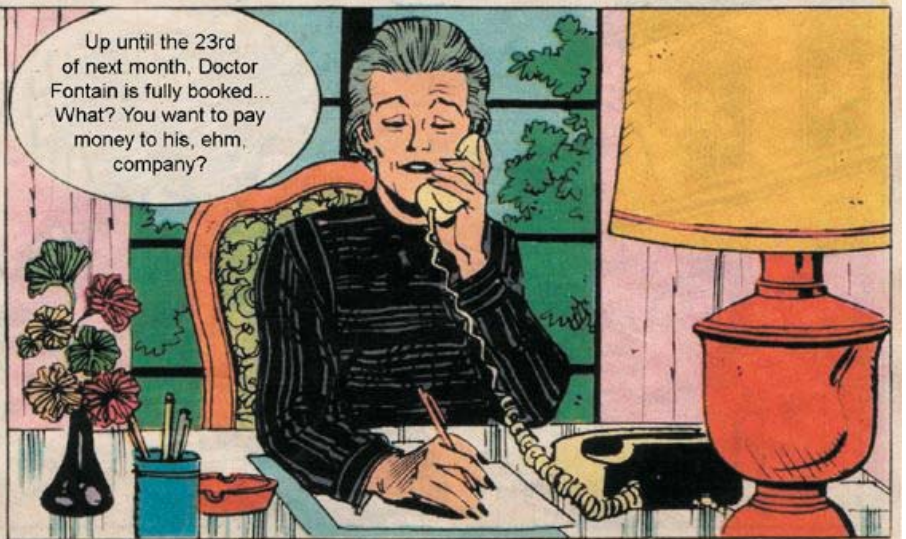
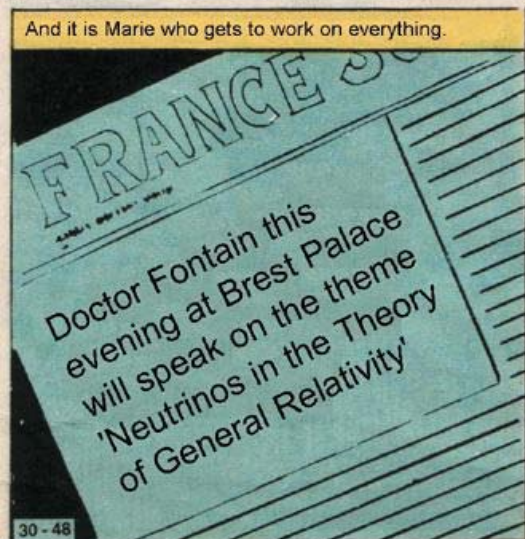
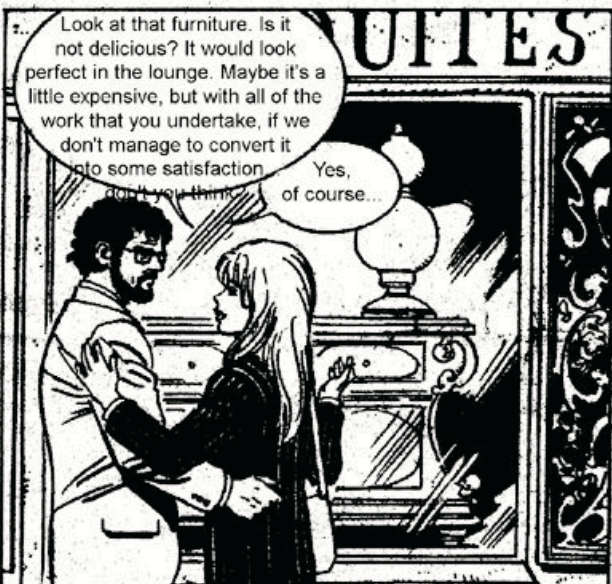
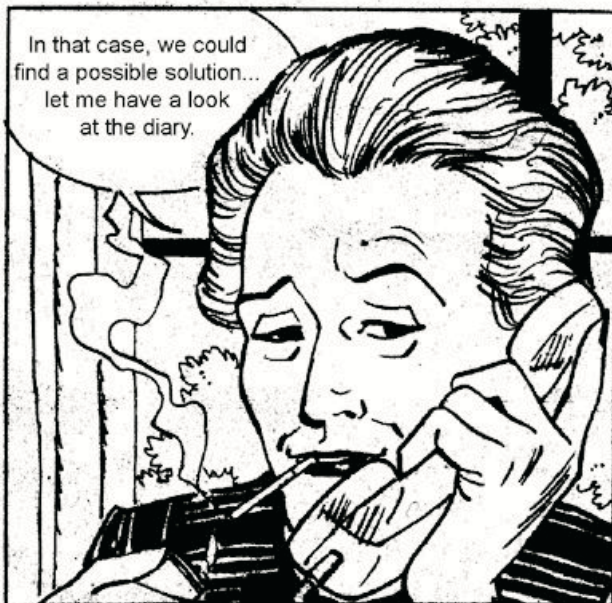


Fig. 4: Landsat 7ETM image – bands 1-2-3

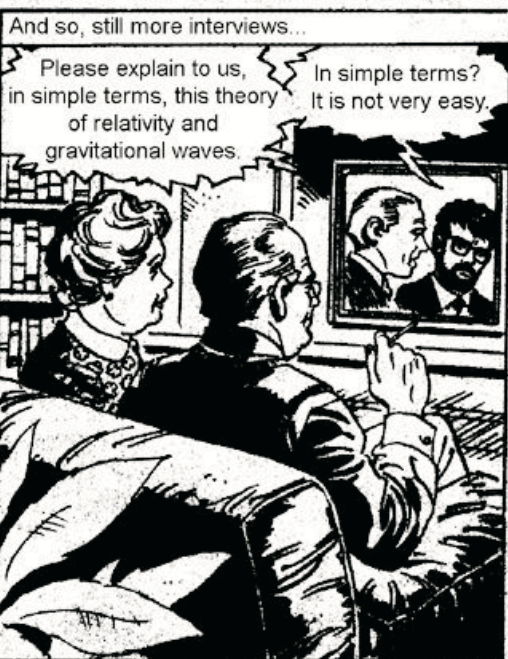
# The Guardian of Nothing - Last Part







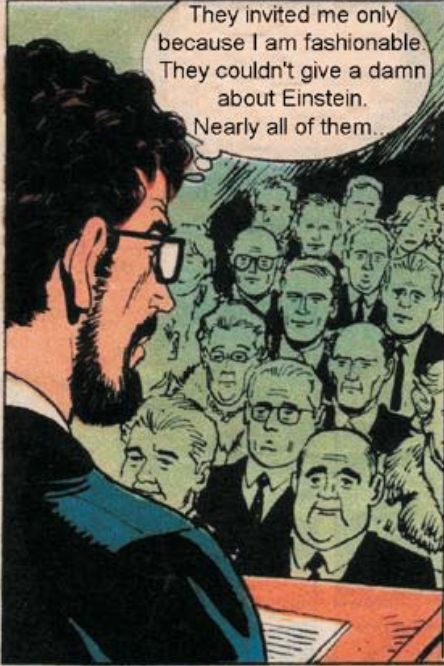
And invites to 'exclusive' circles...



He interrupts himself and observes the expressions. He sees them as nearly all bored, bovine, masquerading false smiles of interest.



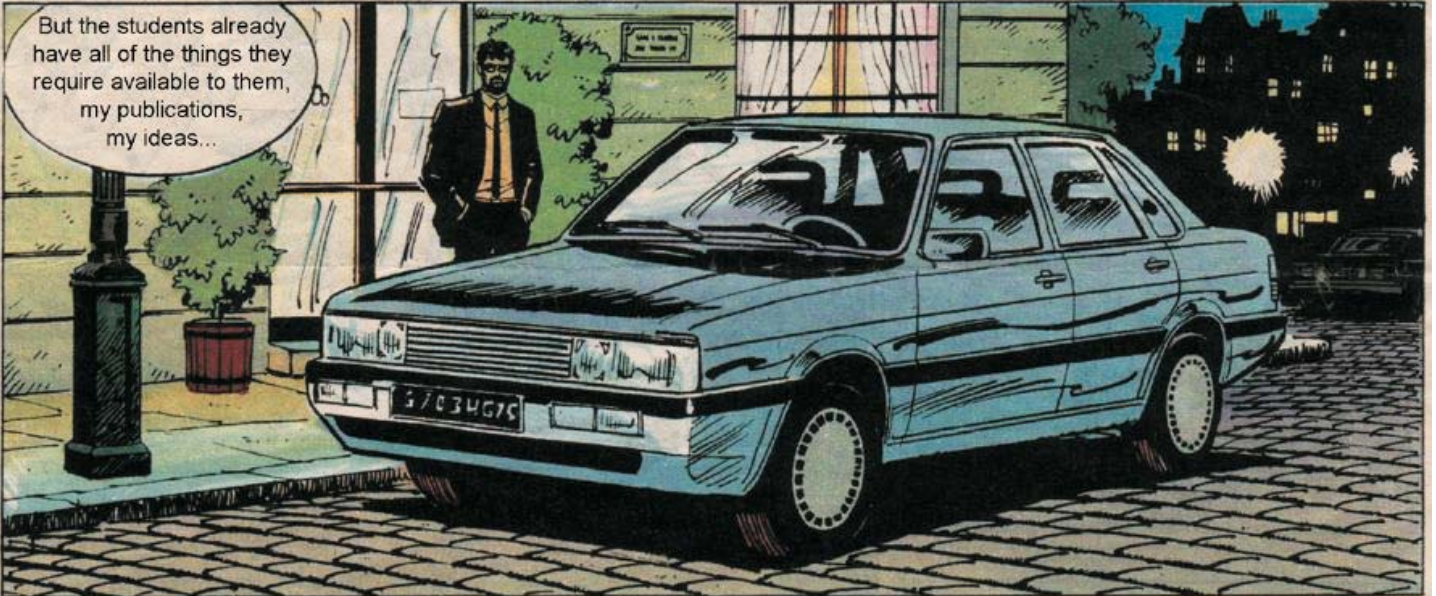
They invited me only because I am fashionable. They couldn't give a damn about Einstein. Nearly all of them...



...and it's like it practically everywhere! I should only speak to students, instead of playing the star!



But the students already have all of the things they require available to them, my publications, my ideas...



All of a sudden, the city provokes in him a sense of suffocation, a desire to leave.



I've returned to say goodbye once again, Alcine.

But... Jules

I'm going back up there. If you want, you can come with me.

But...it's absurd! Nothing else will happen for centuries! What sense is there to return to that desert?





As before, he will once again look into nothing. And only now does he feels at home.



Text: CICO GNA  
Design: RICARD  
English: GARY

THE END





## Is EGO in danger?

**Hearing persistent rumours** concerning the presence of carnivorous plants at EGO, *h* decided finally to carry out a detailed inquiry to really know the truth. Dominique Huet, at the risk of his life, was sent into the jungle of office P13 to interview the mysterious Ms. Virginie Bornes, owner of these plants.

**D.H.: Are these carnivorous plants dangerous for people or goods?**

*V.B.:* Let's be serious. Have you seen how small they are?! They only eat insects. Moreover, we are entering the winter period and their characteristics are changing.

**D.H.: Do they hibernate, like the interferometer?**

*V.B.:* Exactly! First, as the light decreases, they change colour to become green instead of red during the summer. Then the leaf increases and the trap (the part with the peaks) reduces to almost nothing during the winter. They stop eating and they only undertake photosynthesis. So,



*no danger for anybody.*

**D.H.: Can everybody have such a plant?**

*V.B.:* It is quite simple to take care of them. They just need a lot of light and humidity (indeed all of the plants have water saucers). Strangely, even though they eat insects, smaller insects or insect eggs can make them ill. In this case it is necessary to give them some product to eliminate these parasites. So, even children can have them if they do not touch them too often, otherwise this makes them stressed and they become ill, as they begin a fake digestion process.

**D.H.: Why are you interested in carnivorous plants: revenge against society, unhappy childhood, need to murder?**

*V.B.:* Pfff, so silly, it was just a pure coincidence. One day, at the supermarket, I saw these plants, almost abandoned, that were dying. I felt like a WWF member with an animal, I took pity on them and I bought them to take care of them.



However, they can scare some people off: your mother-in-law or our sister-in-law for example. To complete the collection you can go to the different markets of Pisa, or have good relations with Dutch people, who are well supplied in general, or belong to the AIPC (Associazione Italiana Piante Carnivore: <http://www.aipcnet.it>).

*h* thanks Ms. Bornes very much for giving us such comforting news about her carnivorous plants. If you want to know a bit more you can have a look in her office or visit the link: <http://www.bestcarnivorous-plants.com>.

*Photos:*

Top left: Venus flytrap or *Dionaea muscipula*

Top right: Two kinds of *sarracenia*

Bottom left: *Pinguicula*

Bottom right: *Sarracenia*

## EGO Virgo League 2009

**Based on the good performances** in the tournament last year, 'CalcioNE' began auspiciously during the summer with regular matches on the well-known 'Gelsomino' pitch. Even if temperatures were sometimes a bit hot, everybody was waiting impatiently for the official beginning of the EGO Virgo league 2009. But, when the teams were to be picked, volunteers melted away, like snow under the sun: too much work at the office? At home!? Fewer people on site? Nobody knows, and, in the absence of the warriors, it became impossible to make more than two teams. Finally, on October the 8<sup>th</sup>, the unique match of this edition took place and is reported hereafter by our special correspondent, F. Rossi.

Blue team: R.Day, E.Genin, D.Le Galliot, F.Nenci, M.Mohan.  
White Team: C.N.Colacino, D.Huet, J.Marque, L.Paoli, F.Rossi.

After a long and enjoyable football

season at the North End of Virgo, we arrived at the crunch match that closed 2009.

The whites made a sprinting start and, after only a few minutes, took the lead with a goal by Marque, served up by L.Paoli via an optimum assist. But, only two minutes later, the blues were on level terms through a close-range shot by Mohan, a prelude to an enjoyable match, full of goals.

The whites were well organised on the pitch, with the excellent L.Paoli inspired in the assists. First of all he set up Marque to make it 2-1, before



setting up Rossi to move the scoreline to 3-1. The match was all one-way, until the blues reorganised themselves and were able to score. Nenci bringing them back into the match at 3-2. At this point the blues began to believe in the draw and equalised through Mohan. The blues then passed into the lead, although

they were more than a little lucky in so doing. An own-goal by Rossi was followed by another goal, this time scored by Le Galliot – the best player on the pitch – to go in 3-5 up at half time.

In the second half the whites reopened the match with a beautiful goal by Marque. The match continued with an apparent equilibrium, but the blues took the initiative in all sectors of the pitch. They were running more and were more lucid in the the conclusive moments of play. In this way they managed to move 4-6 in front, with a goal by Genin, which proved to be a crucial moment and a decisive blow in the game.

The whites at this point were on their last legs and suffered another blow thanks to a superb strike by Le Galliot to make it 4-7.

Five minutes from the end Colacino scored to make it 5-7 and set up a final five minutes in which the whites searched for the draw with all they could muster, but tiredness and a lack of inspiration in front of goal got the better of them.

The match finished 5-7 to the blues, who, after receiving the compliments of the opposition, lifted the cup they so fully merited, to be crowned ‘Virgo League Champions 2009’.

Man of the match: D. LeGalliot –

Defended well, important playmaker and scored twice. The best player on the pitch.

F. ROSSI and G. HEMMING

## A researcher's day

“Una giornata da.....Ricercatori” is the title of an event that took place on Tuesday, November 3<sup>rd</sup>, at EGO. Upon request of the Regione Toscana, in the framework of the yearly initiative Pianeta Galileo, we hosted 44 high school students, guiding them, over a full day, in simple experiments related to Virgo (<http://www.consiglio.regione.toscana.it/news-ed-eventi/pianeta-galileo/default.asp>).

The students were divided into four groups in order to participate, in turn, in the following activities:

- Measurement of seismic activity and acoustic background
- Signal analysis and noises
- Frequency measurements and pendulum and inverted pendulum characteristics
- Measurement of the index of refraction of air and its dependence on pressure

The day was long and tough, but really rewarding for the tutor team, consisting of Gabriele Balestri, Elena Cuoco, Irene Fiori, Franco Frasconi, Federico Paoletti and myself. We had the clear impression of having reached the heart of the youngsters: many of them asked how to join Virgo and EGO in the coming years.

We had chosen a Tuesday, a maintenance day, for a minimal perturbation to data-taking and in this we succeeded. We did, however have one small failure, stuffing the canteen queue from 13:30 to 14:00, just the time when the EGO direction and the commissioning team came for lunch. We apologize for that!

C. BRADASCHIA



## From Physicist .... to Nurse!

The rumours concerning carnivorous plants at EGO are not the only ones that have been running on site lately. Whispers have also been heard about one of our Virgo colleagues, Enrico Campagna. Enrico joined the Virgo collaboration in 2005. He has been working within the INFN section in Florence and then spent a lot of time on the EGO site where he had a postdoctoral position on the commissioning team. Lately there have been some voices saying that he might leave Virgo and take a new direction in his life. *H* decided to shed light on these rumors and personally meet Enrico!

***h:* Hi Enrico! It's nice to see you! As I warned you, *h* wanted this short interview for one precise reason. We heard in a very informal way that first, you are leaving Virgo and second that you may change your professional life in a drastic way. Where does truth stand?**

*Enrico:* Hum .. you've been well informed! It is true that I am leaving Virgo and that I am changing my professional life. I leave the world of Physics to become .... a nurse!

***h:* Waouh... What a change! Can you explain to us how you came to this decision?**

*Enrico:* In fact, my motivations are very personal: I am looking for a job which will give me more satisfaction in terms of emotional and human return. Indeed this is something which has always been important to me and has become more obvious over time. When I decided to continue my studies in Physics by doing a PhD I had already considered the possibility of working as a nurse; but finally my interest in Science and in particular Physics won.

Now I am getting older, and it might be more difficult in a few years to redirect my professional life. So this may be the right time to try

something new.

*To make it clear: I am not pushing Physics out of my life: I still like it and have interest in that. But I realized Physics does not make me feel connected emotionally to people. I had thought to maybe find a compromise in keeping my professional activity focused on Physics and dedicating some hours of my leisure time to social activities and volunteering. But this was just not manageable. Working as a Physicist requires much time and dedication as does any job in the social field! So I had to make a choice: embrace this new path or let it be. And I finally opted for it!*

***h:* So what are your plans now? How do you expect to become a nurse?**

*Enrico:* I told you earlier that before doing my PhD I had seriously considered the possibility of working as a nurse.

*In fact I completed the first year of infirmary courses and volunteered to be part of the Red Cross intervention teams. So I have requested the acknowledgement of the first year of the training and course program for nurses. Since its whole duration is 3 years, I will be completing the program in the next two years in Pisa to get the diploma. This year I will be trained for 5 months in various services, which will give me already the opportunity to be close to patients. Once I get the diploma I may send my application to some international organizations.. let's see then!*

***h:* Is this decision the expression of your true vocation?**

*Enrico:* Being a nurse means making something good for someone, acting to make that person feel better! You see very quickly the effects of your actions, which is something important to me!

*This does not necessarily mean that I am going to spend the rest of my life in doing that but this is how I feel right now!*

***h:* Well let us wish you good luck Enrico! We'll be glad to hear from**

**you about this new experience! I may not be wrong in saying that your sympathy and kindness touch more than one person here!**

S.PERUS

## New Colleagues at EGO

**This summer two new colleagues** joined us at EGO: Gaelle Parguez and Marta Budroni!

We asked both of them to introduce themselves, giving them the freedom to do it as they wanted. You can read hereafter their respective paper. 2 Different people. 2 Different styles. But both of them very nice! Welcome (again) Marta and Gaelle!

### Marta by Marta

Name: Marta Budroni

Age: never ask the age to a lady!

Birth on: Idem

Born in: LIVORNO (beautiful city on the sea!)

Hello everyone!

I'm writing this article to introduce myself. My name is Marta, I live in Livorno with my parents and my brother and I'm happily engaged. I have some hobbies like playing the violin, underwater diving, snowboard or ski (depends on the snow and the group), tennis and carnivorous plants gardening that I discovered thanks to my office mate Virginie, who I greet and thank. What is my job in EGO?

Well, I'm a jolly between reception desk, inventory of goods and administrative tasks.

What I like at EGO?

The relationship that I created with my colleagues from the administration department, especially when Elena brings cakes and sweets.

Before coming to EGO I did various odd jobs, unfortunately none of them interesting.

A greeting to all!!

## Gaelle by Gaelle

**I arrived nearly four months ago** at EGO, to join the vacuum team as an engineer. After experiences of a different kind, this position is my first “real” job, as well as a real change of orientation. I studied physics and engineering in France, in Grenoble, a lively student city in the middle of the French Alps, where I discovered the endless delights of physics and of mountains. Even though I was studying in an engineering school (an institution certainly quite unknown and enigmatic for any non-French person, let’s say a path parallel to university, leading to the equivalent of a Master’s degree), I focused much more on physics than on engineering, eventually specializing in nanophysics. I was indeed attracted by the novelty and challenges offered by this field.

Having always had a strong liking for travelling and international experiences, I grabbed the opportunity offered by my engineering school to spend the last year of my studies abroad, and moved to New Zealand. I stayed a first year at the University of Canterbury, in Christchurch, to complete my degree. There, I persisted in the field of nanotechnologies, taking courses at the University for one semester and then carrying out a small project close to the biotechnologies field in one of the University laboratories for another semester. This was as well a great opportunity to discover a country of absolute beauty and amazing wilderness, with a unique culture (highlighted more by the kindness and singularity of its inhabitants than by the local food, I must say). As the year I had spent there had seemed to go so quickly, when one of my former lecturers there offered me to go back to work with him I immediately accepted the proposition. I thus returned to New Zealand and the University of Canterbury, where I worked for one more year as part of a research team on nanotechnologies, studying the

*Yes, he did it!*

*Dominique Le Galliot married his Spanish “flame”, Raquel on July 26th. Our warmest congratulations to them!*



properties of some unique nanodevices. After one year, I realized that I would probably prefer working in a more concrete and dynamic context than academic research, and so I left my job, and New Zealand.

Back to France, I decided to take a sabbatical to travel around. For nearly a year, I thus spent my time between small jobs in France and living and travelling in Chile and Bolivia. Then, back again in the family town in Brittany, in France, I began looking for the “dream job” and after some time found the position of vacuum engineer at EGO. This was a drastic change in comparison with my past experiences in nanophysics, passing from the “very small” to the “very big” with the VIRGO experiment. I was indeed willing to move away from academic research, and thus nanophysics, and this position seemed the perfect way to learn something new and interesting in a

challenging and unique context and an international environment. Working on such an experiment is a unique opportunity, Tuscany and the Italian culture have an excellent reputation, and I didn’t hesitate to come and work at EGO. So today, after nearly four months at EGO, I certainly don’t regret my choice. My first impression is excellent; the work is definitely interesting even though I still have a lot to learn at this point... The vacuum team has been extremely welcoming and is still very patient with me. I am thus looking forward to giving my small contribution to this huge experiment.

### **Letters to Editors**

Our readers are invited to send us any comments, proposals, suggestions to improve our newsletter by e-mailing our Editor-in-Chief, [carlo.bradaschia@pi.infn.it](mailto:carlo.bradaschia@pi.infn.it).