

# h

THE GRAVITATIONAL VOICE

number 14

**MARCH 2010**

## In this edition:

# ***A PayMobile for Advanced Virgo!***



### **NEWS FROM THE SITE**

En route to Advanced Virgo  
Geophysicists at EGO

### **NEWS FROM THE WORLD**

Where is Atlantis? (Part 2)  
Homeopathy in GW world

### **LIFE IN CASCINA**

VESF School on GW Data  
Analysis  
Found & Lost



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

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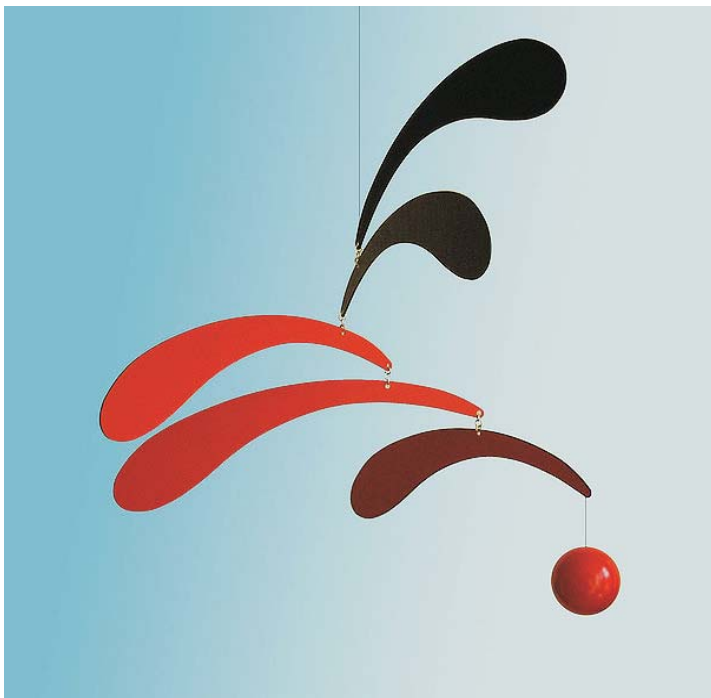
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<b>NEWS FROM THE SITE AND THE COLLABORATION</b>	<b>3</b>
Geophysicists on the site En route to Advanced Virgo!	
<b>NEWS FROM THE WORLD</b>	<b>5</b>
Where is Atlantis? (Part 2) Homeopathy in GW world	
<b>LIFE IN CASCINA</b>	<b>8</b>
Spoken Virglish Found & Lost VESF News 1st School on GW Data Analysis	
<b>PEOPLE</b>	<b>10</b>
New Colleagues at EGO Good news	

The great news arrived at the end of last year: Advanced Virgo has been approved by CNRS and INFN. Once again, as it was celebrated also in the h13 editorial, EGO/Virgo best quality is reaction rapidity. We switched immediately from a study phase to producing executive drawings for the new parts of the apparatus. Our cover picture shows the multi-mirror payload as it has been conceived by the Advanced Virgo payload responsible, Piero Rapagnani. The basic idea came to his mind after visiting "Astri e Particelle", the INFN exhibition on astroparticle physics at Palazzo delle Esposizioni in Roma.



The story is the following. As is traditional at the Palazzo two or more exhibitions on different subjects take place contemporarily and are accessible with a single ticket; this is to foster as much as possible "interculturality". In this spirit, together with "our" exhibition there was the one on the works by the American artist Alexander Calder, the inventor of "Mobiles".  
 (<http://www.palazzo.esposizioni.it/mediacenter/FE/home.aspx>).

C. BRADASCHIA

Cover Page:

Photo of the sketch that we have stolen from Piero's desktop: it is the best demonstration of how well the knowledge transfer goal among diverse cultural fields has been achieved.

## Geophysicists on the site

During the month of November, a group of people were suspiciously moving about the EGO site, and this fact did not go un-noticed.

Perhaps it was because of the strange azure cylinders, which the group always kept with them, inserting them into the ground around all of the EGO halls...

Perhaps it was because one of the group was always dressed in canary yellow and smoked a strong-smelling cigar...

What is certain is that, while walking, they left evident traces of their passing, in the form of bits of turf and muddy footprints on the floor of the canteen.

However, the mystery was quickly solved: the group in question were, for the most part, from the INGV (Istituto Nazionale di Geofisica e Vulcanologia – National Institute of Geophysics and Vulcanology, ), and had been called to collaborate in an analysis of Virgo terrain. In particular, they had been asked to

*Geophysicists discussing seismometer installation close to windmills*



*The team of geophysicists from INGV who visited EGO for measurements*

measure certain characteristic parameters (vibration propagation time, attenuation in function of the frequency and of the distance from a source), in such a way as to have a clearer idea of how seismic noise is propagated at Virgo.

None of them are from Pisa; two are foreigners (one, Thomas Braun, is German, has been in Italy for nearly 20 years and works at the Arezzo site; the other, Lena, is Belgian and graduated last year at Pisa with a thesis in collaboration with the INGV); Nicola Piana is from Florence and works at the Ximeniano Observatory (Firenze); then there is Gilberto Saccorotti, Luciano Zuccarello, Chiara Montagna, Riccardo Azzara and, to close, ‘the man with the canary-coloured coat’, Davide Piccinini (from Rome, but transplanted to Livorno since he got to know a fascinating doctor from Livorno...). They practically all consider themselves Tuscans, at least by adoption. One of them even considers himself a proud ‘Livornese’.

Their work was divided into two different halves, in part within the confines of the site and in part outside, in the fields. In general these measurements are undertaken

employing many seismic sensors (the famous azure cylinders) contemporarily, placing them according to well-defined axes; and this, of course, was done this time, but...there were a few unforeseen difficulties: every time the INGV colleagues ventured into the fields to place a sensor, they encountered the shepherd that lives in the area next to Virgo.

To say that he is a singular person is an understatement and he kept them occupied at length, while his flock grazed, with anecdotes on the ‘...difficult practice of socialisation between men and women in the actual socio-economic context’.

Luckily, all went well: the weather was good (fine, sunny days for the whole measurement period), no damage to any equipment (the danger of theft or damage is always present!), and, to conclude, the shepherd tired himself out and, after a few days, ceased his exchanges with the group of researchers.

Now the analysis of the collected data is in progress. From the results we could well know much more about the terrain of Virgo and how, for example, vibrations caused by traffic propagate, or those attributed to the wind turbines, visible in the direction of Florence.





Keeping in mind that there is the possibility of new installations of turbines of this type around Virgo, the seismic analyses will be very useful in helping to find locations satisfactory for everybody.

F. PAOLETTI

## En route to Advanced Virgo!

**The approval of Advanced Virgo** was a decision highly anticipated by all the people of the Virgo Collaboration and of EGO. It finally happened on December 5<sup>th</sup> 2009.

Although it was a crucial goal to reach and important accomplishments contributed to make it possible such as restarting the Virgo data taking as scheduled with an improved sensitivity and preparing the new mirrors with their fused silica wires suspensions, we shall keep in mind that writing this milestone in the development of the Virgo project faces us with new challenges to meet. Instead of an achievement, the approval of Advanced Virgo is therefore to be considered as a step toward the detection of gravitational waves.

As a second generation instrument, Advanced Virgo aims at gaining a factor of 10 in sensitivity, thus reaching a very high probability of detection and successive study of

gravitational waves. On the road toward this ambitious and fascinating goal, the completion of the Virgo+ program stands as an important milestone.

In particular, we should now focus our effort to:

- Install the new mirrors and re-commission the interferometer in order to restart data taking in coincidence with LIGO in summer 2010 (at the time of writing the two North and West input mirrors are already suspended);

- Then improve the Virgo sensitivity and significantly increase the volume of the observed universe;

- This new scientific period will generate in the years to come a worldwide passionate interest for the analysis of the data, as Virgo will be for at least a couple of years the most sensitive detector ever;

- Finalize the Advanced Virgo design with the production of the TDR by June 2010;

The approval of Advanced Virgo by the Council reveals the trust of the Institutions. Now it is up to us to deserve it!

Jacques COLAS, Director of EGO

and Francesco FIDECARO,  
Virgo Spokesperson  
& EGO Scientific Director

*Excerpt from the minutes of the Council meeting held on December 4th - 5th, 2009 at EGO site:*

### 3. Approval of the Advanced Virgo project

The President of the Council reports about the exchange of letters between the INFN President, R. Petronzio and the Director General of CNRS, A. Migus, both institutions informing on the formal approval of the Advanced Virgo project as part of their respective scientific program.

In consideration of the formal approvals of the Institution Members, the Council deliberates to approve the Advanced Virgo Project.



## I propose a curious excursion (Part II)

Following on from the first part of the article on Marcello Cosci's work in relation to investigations into the locations of the mythical island of Atlantis, reported in the previous issue, we here below provide the second and concluding half.

In light of the studies undertaken by Marcello, a team has been to visit the site and has undertaken preparatory work ready for a full investigation, beginning in March. Our very own Roberto will be making the exciting trip too, to see at first-hand the work for which his father laboured so diligently come to fruition.

Marcello's book, in Italian, has been published by Felici Editore (Srl ISBN 9788860191366) and is available here: [www.feliceditore.it](http://www.feliceditore.it), while Roberto will provide us with updates as to developments on the ground in future issues. Progress can be followed directly, on Facebook/MarcelloCosci.

G. HEMMING

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

by Marcello Cosci

QUICK BIRD is the most powerful satellite with a 61cm geometrical resolution. From the archives of the head office of Telespazio s.p.a. in Rome, which takes care of the sale of the images recorded by Landsat 7ETM and QUICK BIRD spatial stations, it has been possible to choose, from among a wide range of available scenes, some images without clouds in correspondence to the area of interest. These images offer the possibility to highlight more closely the, often almost unperceptible, information, thanks to the higher chromatic variations of the vegetation and bare soils. In fact, exploiting a more effective exaltation of the spectral responses, it has been possible to show the traces of the ample and long canal which joined the sea, the harbour and the city.

Quotes from one of the Plato's dialogues are reported below in italics:

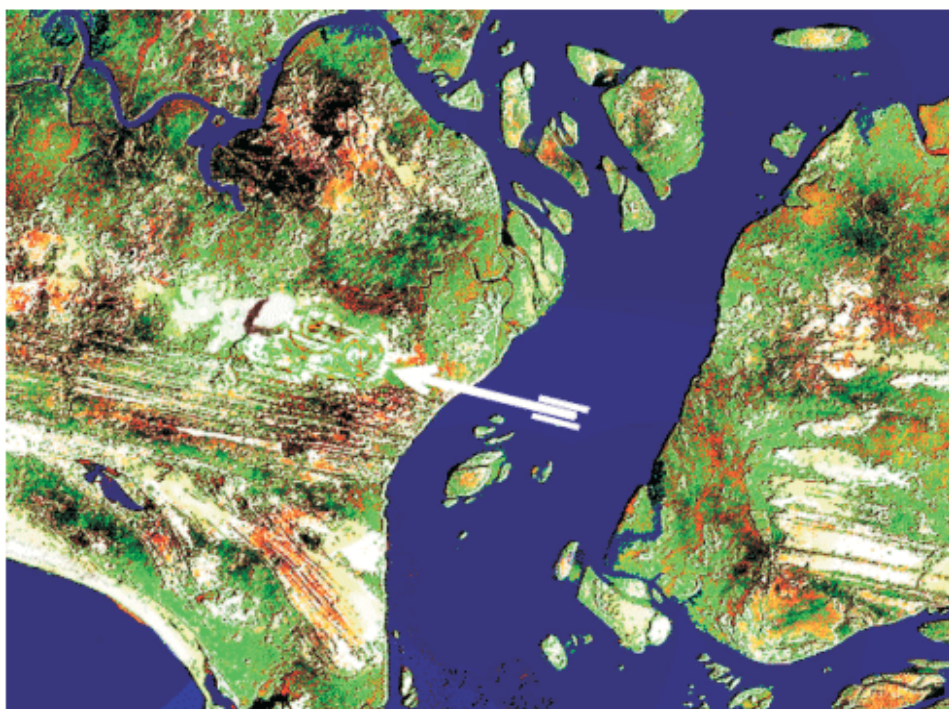


Fig.5: Landsat 7ETM image - bands 1-2-3

*Critias 115d-115e*

*"They created, starting from the sea, a three plectrum wide, one hundred foot deep and fifty stage long connecting canal up to the most external belt of sea: in this way they created the passage from the sea to that belt, as in a port."*

*Critias 117e*

*"All of this extension was covered by numerous and close-fitting dwellings, while the canal and the larger port teemed with boats and merchants arriving from everywhere and who, in the main, brought, day and night, voices, tumult and mayhem of all types."*

*Critias 108e-109a*

*"The island of Atlantis (the sacred island...seat of the emperor) which, as we have said, was at that time larger than Libya and Asia, while now, submerged by earthquakes, and an insurmountable slime that prevents the passage of those that navigate from here (from the port-canal) to the open sea, so that it is not possible to journey beyond."*

On that modest relief, which Critias indifferently called "mountain of modest dimensions on every side", "hill" and, in the end, "central island", which (as reported by Critias) "was inhabited by one of the men born here originally from the ground", the satellite images have revealed the presence of numerous traces attributable to an urban geometrical plant, shown by the sign of an impressive buried masonry structure (Fig. 6). These traces identify the rests of a rectangular building with a dimension of about 100x70 meters.

*Critias 115d*

*"The royal palace was built, from the very beginning, in this same residence of the god and the descendants, receiving it one from the other, as inheritance and adding ornaments to ornaments, always tried to exceed, for that which they could, the predecessor, until they had built a residence so extraordinary to see, for its grandeur and the beauty of its works."*



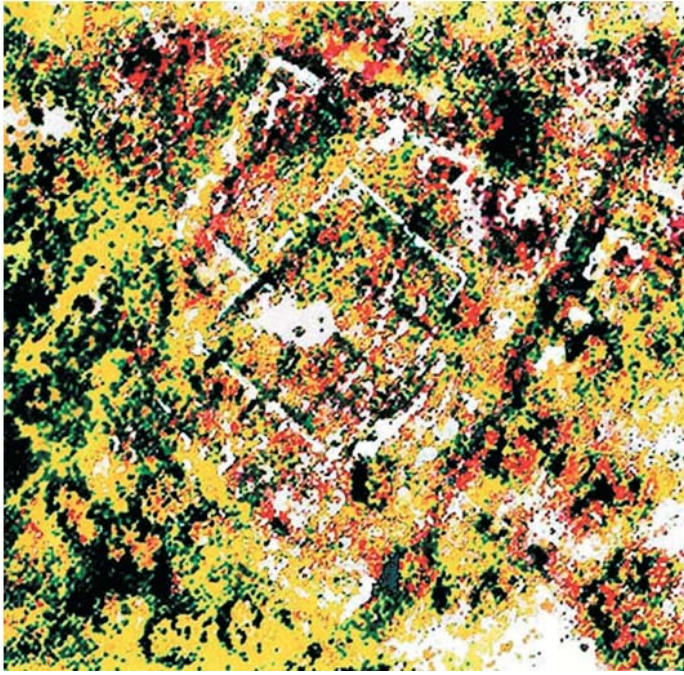


Fig. 6 QUICK BIRD Image

#### Critias 116b

"they cut all of the surrounding stone - white, black, red - from beneath the central island, and below the belts, in the most external parts and the internal ones, and, while they cut they created two deep arsenals inside, covered by that same stone. As for the constructions, some were simple, while others were multi-coloured, mixing the stones to render the visual effect more beautiful: and in such a way they formed a natural grace."

Fig. 7 QUICK BIRD Image



As already said on h 13 the "colourful" stone material used in some buildings is largely present in the subsoil of Sherbro island. Physical discontinuities present in the mass of the closest subsoil with an equilibrated degree of damp or dryness of the ground have simplified the formation of two geometrical anomalies which both appear as a triangle on the surface (Fig. 7).

With similar dimensions (about 2 hectares) the two boundaries have the same orientation with respect to the rectangular building in Fig. 6 (54° from the horizon).

For their particular geometrical shape, these two areas seem to fit, among different hypotheses, to one of the most meaningful passage of Critias' story:

#### Critias 113e

"He himself (Poseidon) easily embellished, as a god can, the island in its central part, making two springs of water burst from the earth, one which issued forth hot from the fount, the other cold."

#### Critias 117a-117b

"As for the springs - that of the source of cold water and that of hot water, of generous abundance, each one extraordinarily adapted to usage for the agreeableness and virtue of the waters - they were used around the dwellings [...] and installing cisterns nearby, some

without roofs, others covered..."

If, by way of hypothesis, Sherbro was the cradle of the civilization of Atlantis, we would need to convince ourselves that the perceptible images of its memory lie in this remote island of the Atlantic Ocean. But this is and remains only a hypothesis. Only a verification undertaken directly on the location itself could, perhaps, provide a definitive reply to the question.

#### And so, the mission has begun...

11 December 2009, Sherbro – In arrival, after eight hours travel!



12 December 2009, Sherbro – heading towards the point of investigation.



December, Sherbro – The exact geolocalisation (after two days of investigation)





December 2009, Sherbro, Yoni village – A salute from our new friends.



To be continued ...

## Homeopathy in GW world

Some time ago, Regione Lombardia and Comune di Milano published two documents with indications on the use of homeopathic remedies ([http://www.comune.milano.it/portale/wps/portal/CDM?WCM\\_GL\\_OBAL\\_CONTEXT=/wps/wcm/connect/contentlibrary/Giornale/Giornale/Tutte+le+notizie/Salute/SALUTE\\_guida\\_omeopatia&styleSize=defaultSize&styleColor=defaultColor](http://www.comune.milano.it/portale/wps/portal/CDM?WCM_GL_OBAL_CONTEXT=/wps/wcm/connect/contentlibrary/Giornale/Giornale/Tutte+le+notizie/Salute/SALUTE_guida_omeopatia&styleSize=defaultSize&styleColor=defaultColor)). This generated a negative reaction from Gruppo 2003 (composed of Italian scientists with a top international reputation) and a positive reaction from the Association of Homeopathic Patients.

These events stimulated our curiosity about the diffusion of homeopathic medicine in a highly scientific and technologic environment. We decided to carry out a census on the subject with the participation of EGO and Virgo members coming frequently at Cascina.

Before a statistical analysis of the outcome of the enquiry, we shall shortly summarize homeopathy. Homeopathy is from Greek hómoios- “like-” and páthos

“suffering”. The principle is expressed also by the Latin sentence “similia similibus curantur” i.e. similar things cure similar things (<http://en.wikipedia.org/wiki/Homeopathy>).

The original idea came from the German physician Christian Friedrich Samuel Hahnemann (1755 – 1843), who noticed that Cinchona, the bark of a Peruvian tree, effective in treating malaria, produced in healthy people the same symptoms as the disease. Then he extended the principle to all other diseases and started a search for a variety of vegetal and chemical substances producing the same effects as the illnesses to combat. Unfortunately in most cases these treatments worsened the condition of the patient. The answer was the dilution of the substances, realizing rapidly that the higher the dilution, the less negative the effects. “Succution” was then added to the remedy preparation procedure, i.e the bottle containing the remedy was strongly tossed against a hard obstacle at every 100 times dilution. It is believed that this “potentizes” the effectiveness of the medicine. Today’s homeopathic remedies, listed in detailed repertories are prepared using these methods. This results in “water” containing almost no trace of the original substance. The effectiveness of these remedies which has never been scientifically proven may be attributed to the placebo effect and to their use only for “light” diseases that would naturally heal by themselves. Life threatening problems are wisely fought using conventional (scientific) medicine. A mysterious property called the memory of water is often hailed as an explanation. It must be said that homeopaths use aspects of the patient's physical and psychological state in selecting remedies to recommend. This is in our opinion a plus with respect to conventional physicians who often approach the patients as objects instead of as human beings. The arguments in favor of homeopathy claiming that about

20% of Europeans use it have to be firmly rejected. Nobody would recommend smoking or playing lotto because a large fraction of people do that!

The Cascina enquiry interrogated 71 individuals avoiding carefully any biasing attitude and making clear that it was not to test their knowledge, but simply to take a picture of our community.

The questions and the proposed choices are the following:

1. Do you know homeopathic medicine? yes / no

2. Do you use homeopathic remedies? yes/no

3. Do you have evidence of their effectiveness? yes / no / I don't know

4. Are there scientific proofs of their effectiveness? yes / no / I don't know

5\*. Homeopathic remedies imply the use of:

A. the same remedy for all diseases  
B. substances that eliminate disease symptoms

C. substances that produce the same symptoms as the disease

D. natural substances that destroy pathogenic agents (bacteria, chemicals, etc.)

E. other (explain)

6\*. Dilution of homeopathic remedies is 1/10 to the power: up to 12 / 13 to 24 / >24 / I don't know

The main finding was that 24% of respondents used homeopathic remedies which is statistically compatible with a European average. The following percentages of users were found on the Web. Italy 10 %, France 36 %, Germany 7 %, UK 2 %; although this data was old and relative to different periods so may be considered an approximation. The Cascina distribution according to nationality is reported in the first

“cylinder” diagram, showing a percentage of Italian users higher than in the outside world.

The second “cylinder” diagram shows the male/female user percentages.

Finally, it is interesting to report the following information:

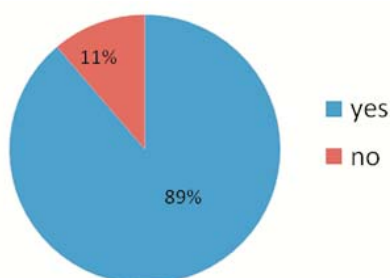
out of 17 users, only 5 know the homeopathy working principle and only 4 know also the dilution values; out of 54 not-users, 17 know the homeopathy working principle and 6 know also the dilution values.

C. BRADASCHIA and D. HUET

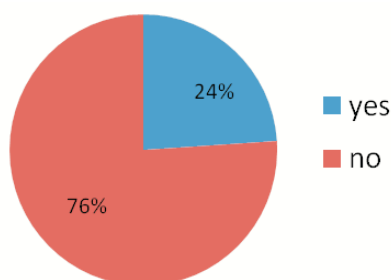
\*The correct answers to questions 5 and 6 are respectively C and <24.

### Here are the results:

#### Do you know homeopathy?



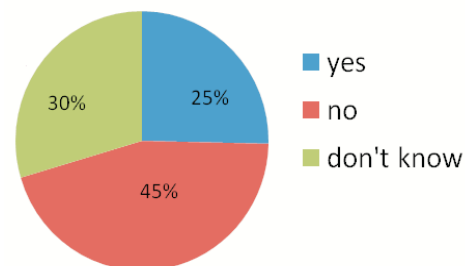
#### Do you use homeopathy?



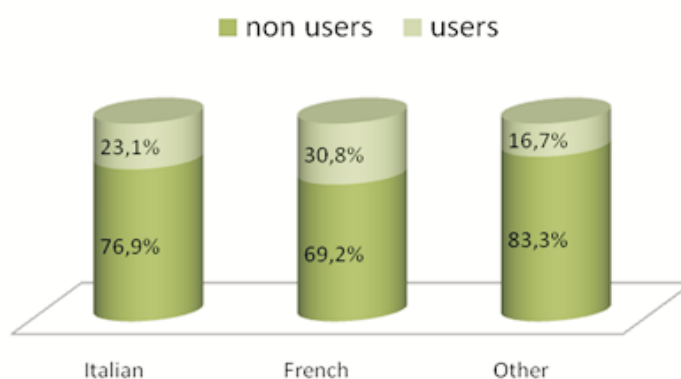
### News from UK, Feb. 22nd

The House of Commons Science and Technology Committee recommended that public money should not be used on the highly-diluted remedies. (<http://news.bbc.co.uk/2/hi/health/8524926.stm>)

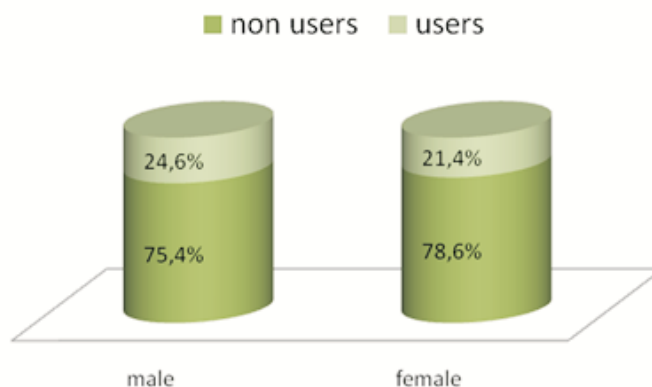
#### Do you have evidence of effectiveness?



#### Distribution according to nationality



#### Distribution according to sex



### Spoken Virglisch

*“The more elaborate our means of communication, the less we communicate.” (J. Priestley)*

**Following on from our series on the correct pronunciation of certain English words, many of which are quite peculiar to Virgo, and in the wider interest of Virglisch as a whole,**

we thought it may be of interest to report a conversation overhead in the corridors, involving a native Virglisch speaker (A) and a native English speaker (B), which we felt particularly highlighted the communication difficulties faced by a multi-lingual collaboration:

A – I will be late to the meeting, as I am bond in another meeting.

B – Sorry, you are Bond?

A – Yes.



B – As in ‘secret agent’, double ‘o’ seven-type thing?

A – Sorry?

B – I thought you’d have kept that information a little more secret to be fair. Unless it’s a fancy dress party you are going to...

A – No, sorry, I don’t have time for a party, I will be in another meeting.

B – Oh, right, I see, you will be ‘bound’ in another meeting. I guess that means that you are ‘tied up’! Ha ha!

A – ...

B – Sorry...anyway, what is the meeting about?

A – It will be talking about the things that are electro-poly shed in LIGO.

B – ‘Electro poly shed’? What is that for then? Have they taken to growing tomatoes on the Hanford site as well? But why ‘electro’? Do they play ambient muzak in order to help plant growth?

A – I think you have mis-understood me. I am referring to how they electro-polish things.

B – Ah! Right you are! Forgive me. Very interesting, yes. Well, we’ll try and delay our meeting a little, so that you are able to participate to as much of it as possible.

A - You are very kind. Awfully I will be able to make it.

B – ‘Awfully’?

A – Yes, ‘aw-fully’.

B – Ah, ‘hopefully’. Yes, I’m with you now.

A – Right. Errr...So, the meeting will discuss controlling lock-aly the Mod Cleaner me or?

B – I’m afraid there’s no ‘or’ and the meeting won’t be discussing the cleaning of either mods or you. Instead it will be looking at the local control of the Mode Cleaner mirror.

A – Eh, yes. That is what I thought...

B – Right, I’ll let you get back to being Bond in your other meeting and will see you in a little while.

A – Yes. Dankyou.

B – Damn me! Whatever for? Well, how rude!

A – Sorry, tank you.

B – Ah, another mis-understanding on my part. You’re welcome.

So, as you can see, communication is not necessarily as straightforward as might be the case between Virglish and English speakers. However, the general consensus here at *h* HQ appears to be that, although it may be necessary to go ‘around the houses’ on occasion, ultimately, it is possible to arrive at a conclusion.

G. HEMMING

## Found & Lost

C.BRADASCHIA

**This time there is nothing found** to be advertized but as far as lost is concerned the matter is really big. A large bus full of visitors was lost!

It happened on October 2<sup>nd</sup>: a group of 60 visitors coordinated by the Deutsches Museum of Munich was expected to visit Virgo in the afternoon. For this special visit we took care to delay the Friday maintenance by several hours in order to allow our guests exceptional access to the Central Building.

In the morning we guided the group on a short but intense visit of the 3 m free fall demonstrator at the Vecchi Macelli exposition area in central Pisa. It was the right appetizer for the afternoon appointment.

Well in advance of the agreed time the three guides (Henrich, Maddalena and I) were ready, the lights in the auditorium were on and the first slide was on the screen. After waiting 30 minutes, Severine

called the group discovering that, blindly following the satellite navigator, they were trying to reach Grecciano via Pontedera. There followed a two-fold explanation, using the excellent Allemand of Severine and the native Deutsche Sprache of Henrich. Totally useless: after 40 more minutes they were still driving around an unidentified location on the Arno plane. At this point, forced by the germanically tight time table, they gave up and drove to the hotel in Montecatini. The story was completed by the later arrival of four of the same group, traveling by car, due to lack of seats in the bus. They enjoyed a personalized visit to the site.

Mid November we received a beautiful book on the Deutsches Museum and a kind thank you letter regretting that “the interesting free fall experience in Pisa, to their great disappointment, did not combine with the visit to the Gravitational Observatory”.

## VESF News

**The Virgo EGO Scientific Forum** VESF, under the active drive of its chair Valeria Ferrari and thanks to the support offered by EGO, has recently carried out several activities:

- The first School on Data Analysis took place at EGO in February 2010; you can read about it on the dedicated article

- A VESF fellowship was awarded in January 2010: the chosen recipient is dr. Riccardo Sturani of University of Urbino (I).

- Two more fellowships have been advertised with the deadline March 7th. The winners will be declared in the spring.

- The VESF School on Gravitational Waves that offers a thorough

introduction to the physics and technology of GW research to graduate students and young researchers, now in its fifth edition, has a new venue and dates: It will be held from July 26th to 30th at the Sexten Center for Astrophysics, in the beautiful village of Sesto Val Pusteria (Sexten) in the heart of the Dolomites. The use of this facility is made possible thanks to a collaboration with the Consorzio Fisica di Trieste.

We hope that this new venue will attract both lecturers and students!

Most of these news, and more can be found on the new web site of VESF at the URL:  
<http://www.roma1.infn.it/teongrav/VESF/>

M.BASSAN

on behalf of the VESF Executive Board

## The VESF School doubles: 1st course on Data Analysis

**The school on Gravitational Waves** is a well established tradition at EGO. It has been offered to graduate students and postdocs every May since 2002. It was first sponsored by SIGRAV (the Italian Society of General Relativity and Gravitation) and subsequently since 2006 it has been promoted and organized by the Virgo-EGO Scientific Forum VESF.

This year VESF doubled the effort. The traditional introductory course to the physics of Gravitational Waves and to the science and technology of detectors has been moved to the summer and is scheduled on July 26-30 in the beautiful Dolomites village of Sesto Val Pusteria, or Sexten.

The novelty is a new school entirely dedicated to signal processing which we held on February 10-13 at EGO.

This was the first VESF School on Gravitational Wave Data Analysis. The format tested was quite new. Each day there was a short introduction to a specific topic, followed by exercises carried out by the students on real data from Virgo's interferometer detector.

Despite the novelty and the freezing cold of this winter the school attracted 20 students from all over Europe. They gathered in the Seminar Room at EGO with their laptops ready inspiring some trepidation in the lecturers and the computing staff. However all went well! Each student was given remote access to EGO computers and could run Virgo software to analyze by themselves real data, in which some signals (not too weak!) had been hidden.

On the first day Elena Cuoco lectured for a couple of hours about noise, a topic we thought important. We were afraid it would be considered boring but it was heartily welcomed! Then the students tried themselves to estimate spectra, to identify transients and to follow non-stationarities. Elena with the aid of Gabriele Vajente ran from one student to the other answering questions and providing hints. The students even forgot the coffee break! On the second day Frédérique Marion and Damir Buskulic introduced binary events. For the rest of the day the students tried digging binary neutron star signals from the data and could appreciate how complex it is dealing with real data containing all sorts of disturbances and deviations as opposed to the gaussian and stationary statistics which theorists hold so dear. The thrill of searching for unknown signals and sometimes even finding them was the final reward of the day.

On the third day Cristiano Palomba and Pia Astone lectured on the search for continuous wave signals and then handed the students their Matlab programs and detailed instructions enabling them to walk through all the analysis steps. This ranged from putting the data in a usable format

in the frequency domain to cleaning them of disturbances and then searching for Doppler shifted signals. If they could not find them the students would modify the upper limits on the strength of waves.

On the final half day the lecturers and the directors of the School convened with the students for some feedback. Did they find the lessons useful? Was the format effective? What could be improved? What went really wrong? The students were not shy and highlighted things which could be organized in a better way but they also displayed a lot of appreciation for the idea of the school and its implementation. They certainly loved the possibility of doing actual analysis work on real data. They were kept very busy but considered the time well spent. They would not recommend a school of such intensity to last for more than three days as it would have been too heavy! Still, we were amazed to hear that some of the students would have welcomed doing some extra homework!

One of the worries harbored by us the organizers was that something technical would go wrong but this did not happen. The EGO computing staff were magnificent, the Virgo software did not show too many bugs and all ran smoothly allowing the students to focus on their work.

The support of the EGO directorate as well as the continued help provided by the EGO secretariat was instrumental in this success. They provided the usual high level of professionalism and anticipated well the needs of the school and its students.

Having survived the experiment, we will certainly repeat it! We may select different topics but will surely dedicate a day to noise as the students aren't afraid of it. "After all," one of them said "most of the data is noise, isn't it?"

A. VICERE and M.BASSAN  
School Co-Directors



## Antonino Chiummo: Here am I!



### Hello EGO people!

I joined EGO on a two-year fellowship at the beginning of December 2009 and I was immediately touched by your warmth, since you arranged a buffet to welcome me just two weeks after my arrival (yes I know there are some rumors about the fact that it was actually due to the approval of Advanced Virgo, but I do not pay attention to these whispers). Furthermore, I really appreciated that the two veterans Federico and Roberto gladly left their office to let a newcomer like me install himself in the most beautiful and light room in building four, even though a strange "aura" does persist at my desk and things keep on failing (first the computer, then the telephone ...). All the people I met when I arrived at EGO were very friendly and have made me feel comfortable since my first day. I guess it is now my turn to reward your kindness by working hard and trying to do as little damage as I can to this wonderful scientific quest.

Well, some more serious words about me and the path that led me to the EGO: I obtained a PhD in Physics at the University of Napoli. I worked as an experimentalist on the building up of Optical Parametric Oscillators, devoted to the production of squeezed light, both

in Napoli, in the Quantum Optics Group led by S. Solimeno and in Paris at the Laboratoire Kastler Brossel with C. Fabre. After my viva I moved to Paris, once more to the LKB this time with E. Giacobino and A. Bramati, for a two-year post-doc. I worked on the setting up of another OPO to be used as a source of squeezed vacuum to test the quantum character of a "memory", based on cold Cesium atoms. At the end of the French adventure I came back to Italy to work in Camerino, "the furthest town in Italy". Camerino is a lively and lovely small student town in the middle of the Marche countryside, but it is almost unreachable using present technology (i.e. without teleportation). There I participated in the early stage of the setting up of a continuous variable Quantum Key Distribution experiment based on Fiber Optics with the Quantum Optics and Information Group led by P. Tombesi. After one year in Camerino (the coldest period in my life, but during which I met warm and friendly people) I needed the sun of Napoli, so I went back to my hometown and joined the Virgo Group over there, working at the characterization of inertial sensors and the control of the suspensions of their prototype interferometer with R. De Rosa. It was there that I heard about the opening in EGO, and so here I am.

Is there a world outside Physics? Yes indeed. I like cycling especially for long trips (well, actually dreaming of them), wandering slowly along unknown roads in unknown towns, trekking in the countryside and mountains, stargazing, running, reading, thinking and talking to the people I meet (not necessarily all at the same time). But most of all I would like to apply for a position as a bestselling novel writer. Does anyone know of any vacancies?

Mode d'emploi: Sometime you will hear me talking about something that I would have been doing "for seven years", such as playing the

violin, working for the CIA, exploring the Amazonian Jungle, and so on. Well, despite the fact that I would have been perfectly able to do all these things and much more, be advised that in these cases I am lying through my teeth.

## Matteo Tacca: Eccomi!

**Hello, I am Matteo and this is a short introduction about me.**

I am from Novara, a small town in northern Italy and I joined Ego and Virgo at the beginning of December. I studied at the Politecnico di Milano where I graduated in Telecommunications Engineering with specialization in optical communications. During my education I focused my interests on physics in particular and I attended all the university courses that I found in this field. In addition I had the chance to spend one year in Orsay, France, where I learned French (language, people & culture) and a lot of theoretical and experimental optics. I returned to Italy where I finally obtained my Laurea degree through research work at a Photonics lab at the Politecnico where I continued to work for six years until I came here.

During the six years I obtained my PhD degree and I worked with an optical fiber company. I conducted



a lot of research on optical fibers properties, both elasto-mechanical and propagation ones. At first, I studied the relationship between optical fibers and their drawing process, analyzing the stress distributions that were frozen into the fiber. The aim was to find a functional and cheap method to reduce optical fiber birefringence in order to optimize communications systems. In a second period, I studied things propagation in optical fiber affected by bending of small curvature radii, with the challenge to bring optical fibers to the user's home. I also analyzed multimode propagation, particularly focusing on the excitation of desired modes for the propagation along a fiber. In the last two years, I started a research activity also on interferometry, implementing and aligning "by hand" different small interferometers on optical tables. In particular, I employed interferometers in order to analyze the orbital angular momentum and the Gouy phase anomaly of Laguerre Gauss and Bessel beams.

Now I have the unique chance to study and work with a "slightly" larger interferometer in this interesting and challenging job! I know that I have a lot to learn, but I am very glad for this opportunity. I met a lot of very welcoming people who were helpful and patient with me... and my first impression is really excellent.

I have a lot of passions and interests, probably because I am "a bit" curious and I like to learn as many things as possible... Thus, I enjoy reading (in particular novels, essays, noire literature and poetry), going to the cinema (art movies), to the theatre and to art museums and exhibitions. I like to travel, in particular around Europe, even if in the last years I started to appreciate also America. Another fundamental feature of my life is music. In fact, at almost every moment there is a soundtrack... In particular, I really love jazz and I have been trying to study it for a lot of years. I also practice martial arts, in particular karate. Incidentally if anybody is

interested to learn and practice it will be very welcome.

Last but not least, my greatest passion is maybe photography. I often have my camera with me and I like to take pictures of faces, details and common life in general.

## PERSONNEL MOVEMENTS

### Arrivals

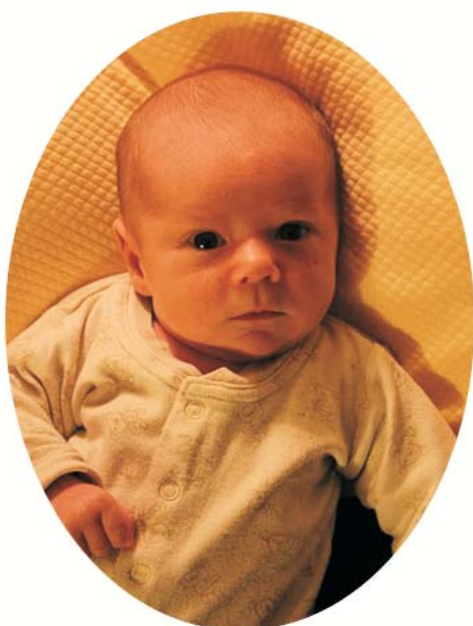
*Antonino Chiummo*  
has joined the Optics group

*Matteo Tacca*  
is involved in the Commissioning team

### Departure

*Dominique Huet*  
left the Commissioning team

## GOOD NEWS!



*Welcome to Oliver (left), born on January 3rd, and congratulations to his parents Richard and Armelle Day.*

*Welcome to Jacopo (below), born on November 7th 2009 and congratulations to his parents, Flavio and Maruska Nocera.*

