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THE GRAVITATIONAL VOICE

number 10

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Safety at EGO

LIFE IN CASCINA

EGO-Virgo League 2008
Restaurants around EGO

NEWS FROM THE WORLD

The 3rd International Conference on
Women in Physics 2008
International Year of Astronomy 2009

News from EGO and VIRGO



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EDITORIAL

This issue, which would normally have been expected around January 1st has been published earlier because EGO will be closed for christmas. This allows the *h* staff to present their warmest wishes to the EGO and Virgo community for the New Year in a timely manner. A new year which is expected to be full of novelties and tireless work (this is not new, indeed). Virgo is over, ILIAS is close to conclusion, Virgo+ is coming up and Advanced Virgo is waiting for approval (articles by Raffaele Flaminio and Giovanni Losurdo), not to mention ET, described in *h9*.

h10 features also several "social" articles, dealing with Women in Physics (Angela di Virgilio), jargon comparison in the GW communities (Stefan Hild) and, last but not least "Schau 'ma mal, dann seh' ma scho" a sweet-and-sour article in perfect LaPennic style, written by Paolo after his decision to quit Cascina and stay in Munich.

The year to come, moreover, promises an intense outreach activity, as it has been declared to be the International Year of Astronomy. This is described in a dedicated column.

Let us repeat loud: "Happy New Year!".

C. BRADASCHIA



Symphony of colors on the Virgo Interferometer!

Thank you to Carlo Fabozzi for this nice picture!

Cover picture: Lighting of the site by night
Author: Maurizio Perciballi

Safety at EGO

At the suggestion of our safety & security officer, Frederic Richard, we would like to present our readers with some basic information about the safety and security aspects at EGO. In addition to the first aid training that every employee is asked to take, EGO through its safety & security service has been active in implementing safety procedures.

What is an emergency?

We can define an emergency as any dangerous situation or circumstance that occurs suddenly and unexpectedly.

Such a situation requires that whoever notices or observes it, or is unfortunately involved in it, reacts in such a way as to reduce any possible damages and to preserve their own and others' safety. If an emergency situation develops, in which safety limits will be exceeded, quick and proper corrective actions are the keys to limiting the danger.

Who is involved?

All of us!
It is sufficient from any of us to refer as soon as possible any situation that could worsen, to avoid severe consequences.

The emergency plan

The EGO inner emergency plan aims to pursue the following objectives:

- addressing an emergency situation as early as possible in order to limit its negative effects and to quickly bring conditions back to normal.
- planning appropriate and essential safety actions in order to protect both EGO staff and all people affected by the emergency condition

▪ protecting in the best way possible EGO assets, structures and equipment.

You can find it at the safety & security web pages (restricted access): <http://www.ego-gw.it/public/about/SafetyAndSecurity.aspx>

Fire brigade & First-aid Team

The mandate of the Fire Brigade and First-aid team is to ensure a quick intervention in case of emergency. The team has just been reduced on purpose to 17 people. It is made up of non-expert people directly employed by EGO. Nevertheless, we are lucky to have among the team: an ambulance man and an expert with regard to the use of autonomous air-breathing system



used in fire fighting. Re-training is in progress for the Fire fighting and first-aid procedures



in order to allow the team to increase its efficiency.

The main role of the team is to quickly react in case of fire and first-aid necessity (e.g. fire fighting, basic life support: heart attack ...)

By "react" we do not intend necessarily a direct intervention as in many cases it could be better to call the Public Security Authorities : Fire **(0)-115**. Emergency **(0)-118**

You can call the EGO emergency team at the extension: **2 2 2 2**

In addition, all the staff received a basic training on first-aid procedures (12 hours). Newcomers will complete their training on December. (files to download on Shared disc X:)

Evacuation

Lastly, we inform you that we will proceed in the forthcoming months with test evacuation of the buildings. Please, take advantage of these events to free the passage from cumbersome objects.

Don't forget, we are all involved in the safety & security process.

THE SAFETY & SECURITY SERVICE
C. FABOZZI & F. RICHARD

Advanced Virgo

I remember (quite a while ago...) when I was an undergraduate student and I ran into the Virgo proposal. There, one can read this sentence about the detection of bursts: “With the first goal (sensitivity of 3.10^{-23} Hz^{-1/2}) the evaluations obtained from astrophysical data put forward the order of magnitude of a few signals per year, with an important uncertainty. (...) On the other hand estimations concerning pseudo-periodic signals from coalescing binaries are much more optimistic.”.

Well, we know what happened: Virgo was approved and realized and, after some years of tough commissioning, the design sensitivity was reached almost everywhere and Virgo is the most sensitive detector in the low frequency range. A big success, indeed.

Meanwhile the rate estimates became less favourable and it is now clear that 1st generation detectors have little chance to make the first detection. Interferometric detectors of 2nd generation are needed: with a sensitivity enhanced by one order of magnitude with respect to Virgo/LIGO the detection of GW becomes probable.

The idea that the first interferometers had to evolve into 2nd generation ones was already present in the LIGO proposal (1989!): the concept of Advanced LIGO is there. NSF has recently signed the check and the Advanced LIGO project has officially started on April 1st 2008.

What happens on the Virgo side? We are trying to follow the same path, in a more troublesome framework. However, the motivation is high and we are strongly convinced that there is one only right choice: turn Virgo into Advanced Virgo (AdV).

The process started later and with less resources than our American

colleagues. However, Virgo is already provided with a vibration isolation system compliant with the advanced sensitivity target and the Virgo commissioning team is already experienced in the exploration of the dangerous world of the frequencies close to 10 Hz..... This experience will certainly save time and partially recover the gap with LIGO.

In Nov 2005 the “AdV White paper” was released. In 2006 a coordinator for AdV was appointed and four working groups were setup to start a design study for the upgrade. The work of the working groups ended in 2007 with the release of the “AdV Conceptual Design”. Afterwards, the process got momentum. The success of Virgo in improving its sensitivity, especially in the low frequency range, made us gain credibility in front of the funding agencies. The organization of AdV was changed: subsystem managers were appointed to cope with the finalization of the design. Regular meetings devoted to discuss AdV design issues are held and the number of people involved has grown. In October, the “AdV Preliminary Design” was released, marking a substantial progress in the definition of the detector configuration and of the needed upgrades.

The AdV team is now working hard to finalize the design. The main ideas are there but many features need to be understood and important choices must be made. It is important, at this stage, that physicists and engineers of the Collaboration, especially the youngsters who are off site and not involved in the commissioning, take the opportunity to join this enterprise.

We are facing a challenging project review in front of a panel chaired by Barry Barish, former LIGO Director. The review process was

started at the beginning of November, will proceed through monthly telecons and will be completed at the end of May. Meanwhile, the available funds are shrinking and the AdV project must survive in the harsh competition to get them.

We’ll do it! The investment done so far in terms not only of money and people but also of passion is too big to fail. We need to be there when GW will be detected for the first time. We need to be there when the way to GW astronomy will be opened.

G. LOSURDO
Advanced Virgo Coordinator

The AdV Logo contest

As soon as the project starts we need a logo for AdV. I propose to hold a contest: everybody can draw and propose a new logo for AdV. The draft logos must be sent to the AdV coordinator by April 30th 2009.

The entire Virgo Collaboration will be called to vote and the most voted will become the official logo of the project.

The author of the most voted logo wins a bottle of good wine offered by the AdV Coordinator (who will end his mandate with the release of the Final Design).



Wind turbines close to EGO

They are clearly visible when looking east from the entrance to the Central building: the four wind-turbines of the newly born "parco eolico Pontedera" wind-park in Gello, next to the "area Piaggio" in Pontedera.

The location of the turbines does indeed correspond to the information we received from ASA ("azienda servizi ambientali", Livorno), which initially managed the project (the present manager is the Belgian company "Electrawinds"). The closest wind-turbine is located at 5.9 km from the North terminal building and at 7.1 km from the Central building. Each turbine delivers 2.3 MW of electric power, the towers are about 100m in height, and the 3-blade rotor is about 90 m in diameter (a total of 150 m from the feet to the tip of the blades). And, as you can easily measure yourself, the rotor completes a full turn in about 5-6 s.

You might be interested to know that wind-turbines have their own "angular alignment controls": feedback controls sense the wind

speed and direction and act to adjust the blade pitch angle in order to keep their rotation speed constant and optimise the power transfer to the grid. In addition, the yaw angle of the rotor is adjusted to keep its axis aligned along the wind direction. A safety control brings the blade pitch angle to zero, to halt the rotor, in the case of the wind being too strong. The "parco eolico di Pontedera" is one of two wind-parks foreseen for construction in the EGO surroundings (see *h2* – October 2006). The second project includes 4 turbines, the closest being at more than 5 km from our West terminal building, and is foreseen to rise in Mortaiolo (Collesalveti).

Being concerned about the seismic noise these wind-parks might produce, EGO (in the persons of previous director F.Menzinger and F.Fidecaro) followed the two projects from the beginning and made agreements about the location of the plants.

A safe distance of about 6 km from each Virgo building was set following a study of the noise emissions of the wind-turbines next to the GEO experiment (Hannover,

Germany). According to that study, we expect a wind-turbine to produce seismic vibrations of the soil peaking at the rotor frequency and its multiples of an order of three (i.e. given a period of the rotor of $T = 5$ s, the first frequency is 0.2 Hz, the others follow in arithmetic progression: $f_n = 3n/T$). These seismic disturbances are very intense close to the turbine, then, as they propagate in the soil, they attenuate with distance following an exponential decay law. The higher frequencies attenuate more and only frequencies below 10 Hz should survive at 1-2 km from the turbines. The intensity of the peaks should scale approximately linearly with the wind speed, being stronger for higher winds. Putting these data into a model and making conservative assumptions about the attenuation properties of the soil, we derived that at about 6 km from the windmills any seismic disturbance they produce, even in the worst wind conditions should be attenuated so as to be not distinguishable from the seismic background noise we have from other anthropogenic sources. Low frequency acoustic pollution is also a possible concern. We investigated it at GEO and found no evidence of acoustic emissions above a few Hz at 1km distance. Infra-sonic (below 1 Hz) emissions are a possibility, although the impact they might have on Virgo is not obvious.

As soon as the wind-park starts working on a more regular basis we are going to monitor the seismic activity, especially at the North terminal building, the most exposed, and especially on very windy days, to detect possible signals from the windmills.

To know more about wind turbines: http://en.wikipedia.org/wiki/Wind_turbine
www.windmission.dk/workshop/BonusTurbine.pdf
www.liceovolterra.it/energia_eolica/tecnologia_degli_aerogeneratori.pdf



I. FIORI

The 3rd IUPAP International Conference on Women in Physics 2008

Late July, just before my summer vacation, Luisa Cifarelli, President of the Italian Physical Society (SIF) proposed I go to Seoul in Korea the ICWIP3 conference which is the IUPAP international conference on women in physics (www.ICWIP2008.org).

I must admit that to date I have not been interested in the problem of women in physics. In general this is a common attitude among women physicists: we like to do physics forgetting the fact that we are women. I accepted out of curiosity but since then I have taken the so called gender problem more seriously, in order to grasp the essential points of the problem and go there reasonably prepared. The first thing I have learned it is that our community is considered under represented by the European Community (She 2007, http://ec.europa.eu/research/science-society/pdf/she_figures_2006_en.pdf, we expect a new document in 2009):

“ Women's increasing participation in the European research area is integral to its success. There can be no room for gender bias if the EU is to move towards the 3% objective and achieve the knowledge based economy that is so essential for the sustained competitiveness of Europe ”*

*It means 3% of the Gross Domestic Product devoted to R&D.

Women are under-represented in science especially in leading positions. They not only lack good careers but are paid less than male colleagues, something which unfortunately not only happens in the scientific environment.

In order to join ICWIP it is necessary to be part of a delegation. The 2008 Italian delegation was lead by Patrizia Cenci, president of the INFN

CPO (Comitato delle pari opportunita'), 3 other physicist were there: Paola Albertini, a CNR physicist from Parma, Ginevra Trinchieri, an astrophysicist from Brera and myself.

Our first duty was to make the poster regarding the Italian gender situation, which is similar to that of other European countries. Women are well represented at the university as students and some enter research but very few become leaders. The situation is worse in northern EU countries where the percentage of female students is very low in the so called “hard” sciences”. It is a well known fact that the first woman full professor in physics in the UK was around 1985.

The conference was extremely interesting and about 70 different countries were represented. France was very well represented: Michel Leduc, Elisabeth Giacobino and Martial Ducloy who are in the International Organizing Committee were there. The interest of Martial who was former EPS President is very high in this kind of matter since he was the promoter of the Forum Physics and Society. The American delegation was the largest one and the APS president was there. APS is very active not only about gender but minorities in general.

It would be very difficult to mention all the organizers but I would like to mention Youngah Park of Korea, Barbara Sandow (Germany) chair of the IUPAP working group women in physics, and the President of the Korean Physical Society Zheong G. Khim.

The Conference was organised in the following way: a set of invited talks in the morning, poster section around 2 pm, and several workshops in the afternoon, two and half days in total. The opening ceremony was honoured by the presence of one of the Korean parliament ministers: a

very “ethereal” woman, very formal and smooth in every respect, who gave a nice polite speech. The invited speakers were well known physicists, who essentially gave a general view of their field of research. Young-Kee Kim vice director of Fermilab, a well known physicist working in CDF and born in Korea, gave a general talk about particle physics. She told us how she became an international physicist. Her origins were deep in the Korean countryside where she was one of the many daughters of a farmer: it was because one of her teacher pushed her to participate in a maths tournament. This was her starting point. Michelle Leduc, a very well known French physicist and President of the French Physical Society who worked with Claude Cohen Tannoudji, has described the field of cold atoms. She was the daughter of two school teachers and was prepared to study literature more than science but her mother pushed her towards science since the possibility of a good career was higher. She told us that in France when girls and boys attended separated school, women took up careers and were successful in science.

Monika Ritch-Marte is a well known Austrian physicist, who has been active in the field of quantum optics. At the moment she is very active in biomedical science and has described in a very clear and enjoyable way how the light microscopy has been improved, providing better tools for diagnostics. Light microscopy's new job was the title of her talk. Maki Kawai is one of the very few woman who is a full professor in Japan. She described her field: single molecule chemistry. At the end of the talk she showed a molecule which looks like a man moving his hand: her way to say good bye.

Pratibha Jolly is chair of the international commission on physics education inside IUPAP and teacher of Miranda House in Delhi, which is a University for very high level education of women. A lot of well known Indians come from this special University: actress, writers etc.. but so far no one has been successful in science. Pratibha's talk was a very important and humorous and her English was sophisticated. Part of the abstract is included below:

In most countries, there is growing concern about dwindling interest in physics about young students, lack of inclusiveness and flight of talent to other disciplines. There is also an increasing global understanding of the strategic importance of physics as an instrument sustainable social progress, economic growth and national development; and consequently, the need to revitalize physics education in culturally relevant ways for diverse student populations. However, altering educational system is a complex task. The presentation will focus on findings of seminal physics education research on student learning that are impacting global praxis and motivating changes in content, context, instruments and ways of teaching learning of physics

with special emphasis on active learning environments that integrate the use of a variety of resources to create experiences that are both hands-on and minds-on.

Within this framework, I will relate initiatives in bringing about innovative changes in a university system, describing a triadic model that entails indigenous development of Physware using low-cost and appropriate technologies; dissemination and assimilation of the new paradigm. The transfer of pedagogic innovation into the formal classroom is facilitated for professional development program that aim to provide experiential learning of research based innovative teaching practices: catalyse the process of reflection through classroom research; and establish a collaborative network of teachers empowered to usher radical transformation.

I enjoyed particularly the seminar given by Thaisa Storchi Bergmann about black holes. Feeding the monster was the title and it was about her work on the feeding of super massive black holes in the nuclei of galaxies.

The rest of the conference was

divided in two poster section and four workshops: Personal professional development, attracting girls to physics, assessing and improving the climate for women, successful proposal and project leadership, fund raising and organizing wip (Women in Physics) working groups (strategy to build an effective working group using WEB). I only attended the first two workshops. To give an example of professional development an expert in social science gave us some hints about how to act when you have to ask for an increase in salary. You have to be conscious of what you want, be well informed about what your colleagues get, etc etc. This applies to places where the salary is negotiated personally, but there are some very general facts that are true worldwide. Women are educated in order to be well accepted and they don't like to create conflicts. There is also the problem of bias, for example people often do not accept a new idea which comes from a woman. There is a lot to say about gender bias, also called "mind bug". If you would like to know if you have this kind of "mind bug" you can look for an appropriate test in the web. Motherhood is of course in conflict with high level career in physics, since very often to reach



the top level you need to travel, and it is difficult to run a family with young children in this way. Several initiatives have been promoted, especially in Germany; Desy has kindergartens to help young women in physics and the Max Plank Institute gives money to help PhD students who get pregnant during their study. DPG as well has similar initiatives. As usual Germans have a very effective way of helping: they provide money!

Attracting women in physics was discussed in practice outreach. Several initiatives use easy experiments to interest people. An American teacher uses very small chocolates to explain the fundamental structure of matter, the quarks. Very small chocolates of gold and silver colour are used to distinguish between up and down quark; I sampled the chocolates but I found the taste disgusting.

Lady CAT (Creators of Activities for Teaching Science) is active in Japan. They have a set of very nice, easy to do experiments, which can be done with very little equipment: soap film physics, inclined plane and double cone, balancing toy, etc. a collection of simple intriguing things to catch the attention of young people. It is clear that good teachers means good students in science and good students remain in science. Not only small experiments but new ways of physics teaching more focused on experiments were being tried. The web of course has a lot about physics teaching. For example IOP has TAP (Teaching Advanced Physics) which contains detailed ideas and resources for teaching physics to students aged 16-19 (http://www.iop.org/activity/education/Projects/Teaching%20Advanced%20Physics/page_8325.html); and PIP, which is to interest children in physics, it covers topics suitable for use when visiting primary schools (http://www.iop.org/activity/outreach/Resources/Physicists_and_Primary_Schools_Project/page_5784.html)
In general, I suggest people

interested in the gender problem take a look at web sites of the largest physics societies:

www.aps.org/programs/women/
www.iop.org/activity/diversity/Gender/
www.dpg-physik.de/

It would be good to take a look at the conference proceedings, as soon as they are ready, around spring. They should be downloadable from the APS web site.

The poster section was rich in many things but unfortunately only 1 hour was dedicated for it. I looked at the posters of people from Africa. Measurements of sea pollution, presence of Zinc in the hair of children dependant on where they are raised (due to the presence of fish in the diet), crystallography in general, and biomedical equipment, specially in Egypt. The wife of President Mubarak, Egypt's first lady, helps a lot in promoting and founding science. I met two female physicists from Yemen who calculate atomic levels. Morocco collaborate with ATLAS at Cern. ICTP in Trieste is of course very well known.

It is very difficult to summarize a conference like this, the only thing that I can report is that I have learned something myself and it is time that the so called "gender" problem is correctly addressed and mitigated in the near future. As far as underdeveloped countries are concerned it is clear that women scientist can play a big role and all possible way of communicating with them is welcome.

The conference was held in a neat and well organized international hotel close to the centre of Seoul. With 20 million inhabitants this is the second largest city in the world but it does not feel so big. It is clear that Korean's are used to living with little, in little space and everything is well organized and neat. The town is full of business men and looks like a large Eastern business town. Everybody is dressed in European

style. I only saw one old lady dressed in the traditional way on the street. I didn't spend much time there but I visited an open market so I had the feeling for their real way of eating: a lot of sea food, dried food, vegetables, very little meat and almost no cakes at all. Their sweets are almost tasteless for us. It is a common way of thinking that Korean girls are more beautiful than Chinese or Japanese. I cannot judge but it is probably true. In general Koreans are very quiet but at night the streets are full of drunk businessmen. It is well known that alcohol has a stronger influence on Asian bodies.

The nice fact about the conference was that women from central Asia and Africa were traditionally dressed: beautiful colours everywhere, and the atmosphere in general was enjoyable and warm. The social dinner was offered by the mayor of Seoul, nice Korean old-style dancers and good food, which seems quite exceptional in Korea. The dancers were great and wore beautiful large coloured dresses. They demonstrated the incredibly soft movement of Asian art with typical relaxing music which we all enjoyed. The local organizer Youngah Paik spent most of the time at dinner thanking everybody. At the end of the social dinner the Vietnamese, who were the only orientals traditionally dressed sang a traditional song. Korean's are always very kind in fact I was quite surprised at the airport, where I almost got lost since you cannot find the word EXIT, which is probably considered rude there.

At the end of the conference the resolution for the IUPAP 26th General Assembly was discussed and voted on (please see: <http://www.icwip2008.org/2008/resolution.php>). A week later, the Resolution was discussed at the IUPAP Conference in Japan. The activity has been approved and will be continued.

A. DI VIRGILIO



IYA 2009

Next year has been declared to be the International Year of Astronomy. This is to celebrate the 400th anniversary of the first use of an astronomical telescope by Galileo Galilei (<http://www.astronomy2009.org/general/>).

Together with all GW observatories worldwide we are organizing a coordinated participation for this important event.

The hot point will be a 24 h webcast, on April 3rd (<http://www.100hoursofastronomy.org/obswebcast.html>). All observatories around the world will be connected in turn to ESO by videoconference and all contributions will be broadcasted on the web in real time.

Our proposal is to always have one GW observatory on line during the ESO 24 hour webcast. The observatory will be ready to react via chat, voice or webcam when needed. Additionally every GW team will have the first 20 minutes of their 6 hour watch shift to present

themselves, e.g at the following times (UT):

2:00 LIGO
8:00 GEO600
14:00 Virgo
20:00 TAMA & AIGO

The other main course of our participation will be "ask the scientist" which is also shared among the various GW observatories. It will last one hour, every week for the whole of 2009. A scientist will be available to answer questions posed via Skype and the conversation will be distributed on the web in real time via streaming.

This use of e-mail or chat is not new but we believe that a "live" conversation to be much more appealing and successful. This will be still in the frame of IYA2009 and duly advertized but does not require any help from that organization.

Further activities are planned in Pisa, with the help of the Comune, the Dipartimento di Fisica and the INFN. These will include special site visits and "open door" days.

As you can see there are many ideas and there is a lot of work to be done. Everyone is warmly invited to volunteer and help.

C. BRADASCHIA

Gravitational Wave Hunters in Babylon

What do you call the degree of freedom referring to the horizontal (mis)alignment of a mirror? The answer to this question probably depends strongly on the actual project or collaboration (Virgo, LIGO, GEO) you are working in. In Virgo it would be 'theta x', while in LIGO 'yaw' and in GEO the term 'rotation' would be used. If you had hoped to find more uniformity for the term referring to the vertical

misalignment you were of course disappointed: GEO uses 'tilt', LIGO goes for 'pitch' and in Virgo-language it is 'theta y'. Confusion!

My personal confusion started when I first visited Cascina during summer 2004 on the occasion of the very first ILIAS working group 1 meeting. At that time I felt a little bit like being in Babylon. The Virgo and GEO commissioners were using rather different languages. In order to be able to understand the discussions and presentations I had to learn new vocabularies: The 'dark port' is equivalent to the 'antisymmetric port', MID (Michelson Differential length) is corresponding to DARM (Differential ARM length) and so on. However, my largest confusion always originated from the Virgo acronyms for the main photodiodes. Which one was the dark port photodiode, 'B5' or 'B1'? And why the hell are there no photodiodes called 'B3', 'B4' and 'B6', even though 'B7' and 'B8' exist?

I believe the members of the Virgo commissioning team must have had similar trouble trying to understand our GEO jargon: While 'LSC_MID_EP-P_HP' (for: Length Sensing and Control, Michelson Differential, Error Point, P quadrature, High Power detector) is the official name of the uncalibrated, demodulated error signal of the differential arm length servo, the same signal calibrated to strain is called 'DER_DATA_HP' (for: DERived DATA, H(t), P quadrature).

Fortunately everybody within the ILIAS working group 1 was learning quickly, thus it was more and more possible to not only discuss our language problems, but also actual commissioning topics. Nevertheless, today I still once in a while struggle and start wondering, when I come along new vocabularies. Is 'diffused light' the same as 'scattered light' and is this then identical to 'stray light'? Or were these words originally associated with different meanings and we just accidentally

merged their meanings by disregardful or even careless usage? In big and living projects such as Virgo or GEO this is in most cases hard to tell and even harder to avoid!

However, I was thinking that it might be handy to compile a small Jargon dictionary for gravitational wave hunters' (<http://www.sr.bham.ac.uk/~hild/dictionary.pdf>), which confused people could use as a cheat sheet. Still being in a continuous process of construction and extension, this small project aims at two goals: Firstly to give translations for terms, differently used in Virgo, GEO and LIGO, such as 'whitening filter', 'emphasis filter' or 'compression filter'. Secondly the dictionary can also be used to collect and explain our beloved TRA (Three Letter Acronym), such as TRC (Technical Review Committee), OSD (Optical Simulation and Design) or ERC (External Review Committee). So if you get confused during reading a technical document or note, not originating from your own collaboration, you might have a chance to quickly find a translation in this dictionary. (However, if you cannot find the term you are looking for in the jargon dictionary, please let me know (hild@ligo.org), thus it can be added.

Perhaps it is time to try to find our way out of Babylon. Over the last few years the Virgo, LIGO and GEO collaborations successfully combined their gravitational wave detection efforts. Data is not only exchanged, but also analysed together. Hopefully this fruitful development will also have some positive effect on unifying our technical vocabulary.

Stefan HILD
from the University of Birmingham

Bye Bye ILIAS, Hello ET!

The first proposal was to call it

ILIAD (Integrated Large Infrastructure for Astroparticle Detection). Then the "Latins" arrived and proposed ILIAD (Integrated Large Infrastructure for Astroparticle Detection in Europe). Finally Stavros closed the affair. He is from Greece, he knows about epos and the name became ILIAS (Integrated Large Infrastructure for Astroparticle Science).

This was a unique opportunity for the community of physicists involved in gravitational wave detection all across Europe. For the first time all the people involved in Virgo, GEO and resonant-bar antennas were going to work together on the same project. Daniel, who had recently been appointed as EGO vice-director, knew that this was a great occasion and drafted the very first version of the letter of intent. Then with the help of Daniel and pushed by the always very enthusiastic support of Adalberto, Benoit and Karsten, I started putting together the pieces of the gravitational wave contributions to the ILIAS proposal. The agreement was that the gravitational wave section of the proposal would have been composed of two parts: a network activity and a joint R&D project devoted to thermal noise reduction.

At one of the first meetings devoted to the preparation of the proposal Geppo showed up; it took five minutes to convince him to take care of the joint R&D project devoted to thermal noise reduction (later called STREGA which stays for Study of Thermal Noise Reduction in Gravitational Wave Detectors. In Italian it means witch). I would have continued to work on the gravitational wave network proposal (GWA).

The initial ILIAS proposal was to integrate all the infrastructures devoted to astroparticle science; ranging from cosmic ray detectors on board satellites to large gamma ray telescopes, from ground-based gravitational wave antennas to underground dark matter detectors

and underwater neutrino telescopes, all of them! It was the multi-messenger approach that, slowly but continuously, is changing our view of the Universe.

The EU did not have enough funds and decided to approve the part of the project devoted to the more vanishing particles: neutrinos, dark matter and gravitational waves. We were in! And we were in together with our 'underground colleagues'. A sign of destiny?

Last month, five years after the ILIAS proposal was approved, the community of European researchers working on gravitational wave detection met at the last ILIAS-GW annual general meeting. Meanwhile the GWA network has been running three successful working groups.

The first working group lead by Giovanni and Hartmut gathered together for the first time all the young physicists working in the commissioning of the Virgo and GEO detectors. People who only rarely had the opportunity to see each other at some international conference, met systematically four times a year to exchange detailed and precious information about the way to operate a gravitational wave detector and improve its sensitivity. This group not only impacted very positively on the commissioning of Virgo and GEO, but also created a structure of relationships between some of the people who were to drive the gravitational wave research in the years to come. Even if less visible this is probably one of the achievements of ILIAS, we can be more proud of.

The second working group, lead by Sathya, Siong, Giovanni and Gianluca initially concentrated on network data analysis. Later it focused on astrophysics and on all the potential coincidences one can expect between a gravitational wave signal and those from other types of telescopes. There we heard for the first time about the richness of the physics one could do with a dream-detector like ET.

And eventually the third working group transformed the dream into something real. This was the working group lead by Harald and Michele and in charge of developing a European strategy for future gravitational wave detectors. There the ET proposal was born and matured. It finally became a proposal submitted to the EU as a design study of the next large European infrastructure dedicated to gravitational wave astronomy.

Last week in Cascina at the Virgo site, the circle was closed. Michele, Massimo, Veronica and Virginie organized the last ILIAS-GW annual general meeting which was also the first ET general meeting. We moved from “what we should do in the future” to “how we should it”. Stefan told us that it is possible to improve the Virgo sensitivity by two orders of magnitude with just a ‘little bit of magic’. And since we have a STREGA on our side, that improvement should certainly be possible.

Raffaele FLAMINIO
ILIAS N5 Team Leader

The Red Army takes the EGO-Virgo League

The inaugural EGO-Virgo five-a-side football league reached its conclusion in October and was won in resounding fashion by the red team of Dominique Huet, Francesco Berni, Paolo Ruggi, Federico Nenci and Dominique Le Galliot.

The fixtures panned out in such a way that the very last match to be played was that between the reds and the yellows (Roberto Cosci, Luca Paoli, Michele Bazzi, Frédéric Richard and Giuseppe Di Biase) would also be decisive in terms of who would win the title. Despite the fact that yellows possessed the devastatingly effective

Giuseppe – scorer of no fewer than 23 goals in the previous five matches – the reds, who had clinically seen off all-comers in the previous matches and were undoubtedly the group that played most as a team of the four competing, started the match as hot favourites.

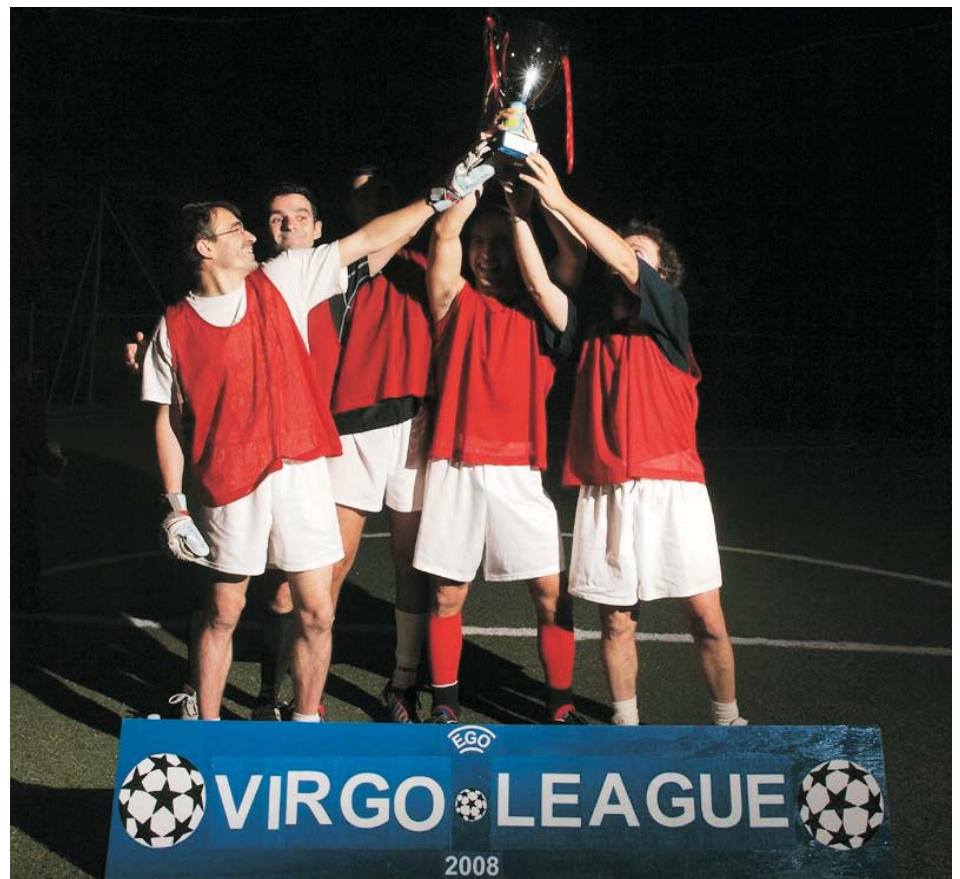
A large number of spectators made the trip to Coltano for the big event and were not let down in the process – at least if they were not supporting the yellows anyway. The reds took an early lead on five minutes, but were quickly pegged back by yet another goal from Giuseppe. However, parity was short-lived as the reds moved into a dominant 6-1 lead at half-time. Despite valiant efforts to get back into the match after the break, the yellow team was unable to find the required extra gas

in the tank. The match eventually slipped away from them and finished in a resounding victory for the reds, 10-1, with goals being scored by: Dominique L (4), Federico (3), Berni (2) and Ruggi (1).

The match itself was followed by a dinner for all involved - both players and spectators - as well as the medal and trophy-giving ceremony. Special recognition was made of the efforts made by Fabrizio Rossi for his meticulous preparation and care of the pitch for each and every match and also for his unbounded enthusiasm for the tournament from the very beginning.

We should also not neglect to mention here that Paolo Ruggi now currently holds the titles of both EGO-Virgo League Champion and

| Classifica | P | W | D | L | F | A | GD | Pts |
|------------------|---|---|---|---|----|----|-----|-----|
| 1 Squadra Rossa | 6 | 5 | 1 | 0 | 38 | 17 | 21 | 16 |
| 2 Squadra Gialla | 6 | 4 | 0 | 2 | 38 | 40 | -2 | 12 |
| 3 Squadra Blu | 6 | 1 | 1 | 4 | 30 | 38 | -8 | 4 |
| 4 Squadra Bianca | 6 | 0 | 2 | 4 | 31 | 42 | -11 | 2 |



EGO Biathlon Champion. That's some feat. Who knows whether he will still be in the same position in a year?

G. HEMMING & F. ROSSI

The total number of goals scored by each player during the league is listed below.

| Marcatore | Reti |
|------------------|------|
| 1 G. Di Biase | 24 |
| 2 D. Le Galliot | 16 |
| = F. Rossi | 16 |
| 4 J. Marque | 13 |
| = F. Nenci | 13 |
| 6 M. Mohan | 10 |
| 7 G. Hemming | 8 |
| 8 E. Calloni | 6 |
| = E. Genin | 6 |
| = F. Richard | 6 |
| 11 M. Bazzi | 5 |
| 12 P. Ruggi | 3 |
| = F. Berni | 2 |
| = D. Huet | 2 |
| 15 S. Chatterji | 1 |
| = R. Macchia | 1 |
| = A. Paoli | 1 |
| = L. Paoli | 1 |
| = A. Pasqualetti | 1 |

Restaurants around EGO

When I came to EGO I bought several guide books in order to find some nice restaurants. I soon found however that most of the other diners were tourists clutching guide books. With this in mind I emailed ego staff asking for suggestions...

- > Restaurant Name:
- > Restaurant Address:
- > Comment:

I also provided a link to trip Advisors list in order to have starting point.. http://www.tripadvisor.com/AllLocations-g187899-c3-Restaurants-Pisa_Tuscany.html
The initial intention was to compile

a top 10 list of restaurants based on statistics but there were only 4 replies and no single restaurant was named twice. Everyone who replied was of a different nationality so I will list the restaurants alphabetically by nationality and will include my own thoughts.

Dutch

1. Trattoria S.Omobono, piazza S.Omobono - Pisa. Simple but decent Tuscan dishes, but cheap (~20 E pp) and friendly.

2. La Grotta, via San Francesco - Pisa. Very tasty, friendly waiter that talks a lot, little bit expensive (~35 E pp)

3. Osteria dei Cavalieri, Via San Frediano - Pisa. Very good, but not the cheapest (>= 40 E?)

French

1. Ristorante La stanzina, via Cavalca, 30 - Pisa

Not a lot of choice but very well made, especially 'L'involto' (may be the best of the world). Nice wines, good reception.

2. Ristorante Pizzeria Le Repubbliche Marinare, vicolo Ricciardi, 8 - Pisa

A lot of choice, well made especially in seafood. Nice wines, good reception

3. Pizzeria La Bersagliera, via Pisana Vecchia, 2136 - Lucca. May be difficult to find, not possible to book, always a lot of people (you might wait outside!) BUT pizzas so big and so good!

German

1. Spaghetteria "Le Bandierine", via Mercanti, 4 - Pisa. A nice restaurant with good food, near to cinema "Odeon". As the name says, they make spaghetti, but also other things.

Beware: 10% service to be paid extra!!

2. Il Montino, via del Monte 1 - Pisa. Pizza/Focacce al taglio, a very little place, visited by students, often a lot of people. Focaccia con cecina 2.20 (around). Some tables outside. For having something quick but good. In the center of Pisa. ...we should not forget the excellent

ice cream available at...

2. L'Incanto, piazza Caduti di Timisoara, Fornacette. Very good ice cream (the best around for my opinion), cool music, and very good tavola calda at lunch time. And the best: you can sit outside eating your icecream and enjoy the sight on the parking place with all the people arriving and leaving. 10 km from Virgo direction Pontedera. For people working evening shifts:
3. Pablo, Quattrostrade di Perignano. A little pizzeria (a taglio), recently evolved in a nice little restaurant where you can have quality food (and still pizza a taglio, if you wish). They also have an interesting enoteca. In summer you can sit outside. Serve also at lunch time. 10 km from Virgo direction Cenaia/Perignano. Chiused on Tuesdays.

Irish

1. Ristorante Galileo, via Silvestri, 12 - Pisa. Tel: +39 050 28287 (just off via San Martino). This is in the higher price range but food and service is very good.

2. Enoteca Chicchessia, via S. Martino 71/73 - Pisa. Tel: 333 4938777. This is half way between a pub and a restaurant. You can have a meal or just sit for a drink. The prices are reasonable and dishes are varied. First time I tried pizza with chips as topping.

3. La Gatta e La Luna, via Provinciale delle Colline Livornesi 1 - Valtriano di Fauglia (Pisa). Tel. 050644013. This is the restaurant where the staff at EGO ate lunch before the canteen was introduced and is about 20 minutes drive from Pisa. The service is very relaxed so do not go if you are in a hurry. Cats wander around the restaurant freely.

Italian

Pizzeria da Filippo, via Corridoni (just in front to rail station) Very good!

Wherever you may decide to go, enjoy!

M. MOHAN

Schau 'ma mal, dann seh' ma scho*

by Paolo La Penna

More than one year ago, when interviewed by Flavio Nocera, I exhorted him to bet on my coming back to EGO (and I even agreed to split the jackpot with him, which would have been dirty insider trading). Sorry for him, for those who bet on my return (I suppose not many: there are more important things to bet on) and for my (anyhow small) jackpot quote, because actually, after one year of limbo and judgment suspension, I've decided to remain at ESO, I don't know for how long (it also depends on ESO), and so to leave VIRGO. It has not been an easy decision. None of those who read this text can understand how difficult it is to live abroad (abroad is only out of Italy, of course). Very important for me has been the fact that I've been rejoined by my family, and now I can lead a normal life and offer to my children the opportunity of a good education. From a personal and professional point of view, there is surely the desire to try and learn something else, after so many years of working only for VIRGO (I started working in S. Piero in February 1995, when the site ground had not even been purchased). It's true that, in such a peculiar and difficult activity as VIRGO, you get a real understanding and command of the matter only after many years. But I felt that the level of my specialization was becoming too high. In particular for those working in EGO, VIRGO is really the only activity. Those working in the INFN or in the CNRS can, even if collaterally, interact with other activities, experiments, can at least see other people doing other

things. For the EGO staff the only thing going on is VIRGO, the only people going around are working for VIRGO, there is no plan of starting other activities in the field of gravitation, even R&D are not encouraged, meetings and seminars concern almost exclusively gravitational waves and similar, every possible future career is in VIRGO and her progeny. And this in the best case, because of course there may be no VIRGO descent, and so the problem would not be only psychological. If Advanced VIRGO, for example, were not financed, or if for any reason the governments decided to stop gravitational wave research, or simply strongly reduce funding, for many servants of INFN or CNRS this would mean a life disappointment, but they would keep their salary, sobbing, but doing something else. The EGO employees would essentially only sob, because their salary would last not long. And the possibilities to be recycled in any research institution or somewhere else, especially in Italy, are becoming, particularly in recent years, worse and worse. I think that nobody is really aware of this peculiarity of the life of the EGO members of VIRGO. In particular, for those who have a background as a researcher, it is, and will be, a difficult and worrying situation to live in, if things do not improve. I think that almost everybody in EGO, who has had the opportunity to change her/his position, either to go to INFN or CNRS, or to do something else, has more than seriously taken it into account. There must be a reason for that. Think about that, before lamenting the alleged privileges of the EGO employees.

In Cascina I'm leaving some of my best friends and many colleagues I

was very happy to work with. I have known some of them for almost fourteen years. All the people I've worked with in VIRGO are really smart and competent, this has been said so many times by so many people: the work we have been able to do in VIRGO, and in particular on the site and in EGO, is enormous compared to the quantity of really involved people, and to the level of organization of our project. The atmosphere among us in EGO was very warm, and I'm really missing the friendly companionship of my closest colleagues, both from EGO and from many other laboratories. I don't think I'll again find such a dedication to the work, and such a desire (and capacity) to arrive to a solution for problems, things that I've also shared with conviction, and I consider myself as lucky to have had the opportunity to work at this experiment. It was 1994 when I first heard of VIRGO: A. Giazotto was giving an advertising (or better recruiting?) talk to physicists and astronomers in Arcetri, and he was presented as "the richest man of INFN" (and at that time INFN was quite rich). VIRGO was promising breaking discoveries in physics and astronomy before 2000, and I, who had worked up to then at table-top experiments, was young enough to really consider it a fantastic adventure in the world of that big science I was dreaming of since I was a small boy. In 1996 A. Brillet could describe during a "VIRGO week" the GW research as one of the most exciting and promising field of the modern physics.

It was 1998 when D. Enard defined his understanding of VIRGO not as a simple experiment, but as an observatory, going to join LIGO in doing astronomy in a few years. And in 2001 Shoemaker still answered to the question "which kind of source

will be the first one detected?” with a peremptory “Unexpected!”, thus reaffirming the so often repeated leit-motiv, that when you switched on a new kind of detector you always discovered a world of unexpected things. This was what was believed about ten years ago. So many years have elapsed since then, during which VIRGO was eventually built and its commissioning accomplished with so much effort. I remember a lot of beautiful moments: many “first events” : the first time we locked the central interferometer, the first time the recycling cavity was locked, when I saw for the first time the Nd:YAG transmitted at the end of the North End, when the first arm was aligned, and since then the interferometer being locked step by step, and people starting to believe that the “trappolone” was really going to work. And so on. Even if among these first events no first detection has taken place, the interferometric detection of gravitational waves, and in particular VIRGO, has gained a lot in reputation and credibility since then, all over the scientific community. Many things, which seemed (and were) so challenging or almost impossible at that time, when they were being done for the first time, are now routine. Working for VIRGO, and in particular in the years of commissioning, I’ve accumulated a huge load of experience: technical, scientific and human. I will miss all that. And I’m missing all our happy lunches and discussions at the various restaurants around VIRGO, even the Iguana I’m regretting, now that I’ve to dine at the Max-Planck Kantine (well deserving of its ill fame), to say nothing of Chiesanova, Le Colline, and, sweet old memory, Coltano. Even if, since EGO now has its own canteen, all that is over anyway. I think that VIRGO will remain the

marking experience of my working life.

But it has not always been a bowl of cherries. I had to accept a lot of bitterness, starting from the fact that, in order to enjoy the true privilege of working in such a marvelous experiment, I, like so many others, mainly in Italy, couldn’t expect to have a permanent position, at least not for many many years, and not in a canonical public research institution, such as the INFN or a university, for example, and in any case in an institute, like EGO, which in itself is not permanent. The level of fighting and quarreling in VIRGO is much higher than the average. The competition even between the lower degrees of the experiment was often discouraging and even humiliating. There were times when it seemed that there was rejoicing at the failure of the efforts of others. So many were working with the impression that the important things were made by a handful of people, the others playing just a subordinate role. And, even if it’s the same the whole world over (and it’s a mean world, you know), it has been a pity to see so many smart guys reduced to fight so drearily in such a small enclosure, and for things which probably don’t deserve or benefit of such level of conflict. I’ve never been able to fight that way, maybe it is necessary in this field, so maybe it’s me that is not fit for that kind of life. But the result has been that I’ve really had very bad periods, which I absolutely don’t regret. And the organization of the project, in itself, is supporting this situation: every laboratory tries to protect its own garden, every attempt to understand what the other is doing is considered an intrusion, and in order to penetrate any activity of the others an intrusion is necessary. And in general, since the organization level and the

command chain confused, including the enormous and proliferating number of often useless and ineffective meetings, it is difficult to expect prompt responses from people, whoever has some responsibility or results to attain easily becomes nervous. What is mainly saddening, is that VIRGO is not a company producing motorbikes or umbrellas, there should be no need for profit and corresponding stress, it’s essentially a big toy, for which what is really important is the enthusiasm and devotion (as well as competence and intelligence) of the people working at it, and life could be much more relaxed and interesting.

In the end, however, the question is whether all this stress has produced some benefit to the progress of the experiment. What is important, even for the survival of this research field, are the results. If this way of working has made things faster or more productive, so it has all been worthwhile.

Even if the commissioning years look quite a success, personally, I believe that a better use of the people would have speeded up the activity, and we could be much closer to LIGO with a better exploitation of our human resources. VIRGO papers have been signed by almost two hundred names, but only a few have been properly involved in the detector work. I think that a better sharing of the workload would have resulted in a more efficient, not only more satisfactory, progression of the activity.

I don’t want to say that I would have been capable of making things much better, surely not. But it’s true that the VIRGO commissioning has been a very hard period of my life. In the first years of VIRGO it was

dubious that any gravitational wave interferometer, to say nothing of VIRGO, would have worked at all, and the people really working at the interferometer were very few, so I can understand that the stress and pressure was very hard. I hope that now, when this field of investigation is becoming more respectable, more people are joining VIRGO, and there is good confidence that at least there is the possibility to make things work, the situation will improve. I think that with such a conflictual atmosphere you cannot go very far, in particular with the increasing complexity. This is really something that will greatly damage the activity.

All this should be no surprise. The whole history of discovery, of any kind and at any level, has been mainly motivated by competition and pushed by fights between investigators, who often put their desire to be first and famous before the importance of having solved a problem and making available a new truth. But discovery has nonetheless progressed, and that should be the only goal those working for the science should keep in mind: to contribute to at least a small step forward in unveiling the world surrounding us. Even if maybe I'm repeating myself (but when doing something questionable one has to do that often, to confirm one's continuously challenged self-conviction), with this aim every disappointment and frustration can be accepted. Well, from this point of view I've failed, even if I'm not the only one. I would have liked to measure something unknown, belonging to the natural world, if not to be there for the first detection. But not at all, nothing like that has happened yet. Up to now, we haven't really seen anything of the nature. We have been, for years, building

and characterizing an instrument, measuring noise. That should not be the final objective of a physicist. So, after so many years, it's not easy to leave a work I have dedicated so much effort to, to which, a long time ago, I had already sacrificed a safe and prosperous career to accept a lot of difficulties, uncertainty and bitterness, without having reached the real goal. It's true that I left VIRGO after many years of work, when the parts I have contributed were working, when the detector was running taking data. In a certain sense, a milestone of my job had been accomplished, I could consider at least this part of my work concluded, I feel I didn't leave my work incomplete. From this point of view I have no regret. But it was already clear that there would have been no detection. From this point of view my work has been close to a long and wearing waste of time. I can only think, in the most obvious way, that it has been a small contribution in a long lasting research, which will give its results in the future. I belong essentially already to a second generation in VIRGO, maybe the third or fourth in gravitational wave research, and now new generations are (hopefully) taking their place in the quest. For almost half a century now, people have become old in this endeavour, probably one of the longest in the history of modern science, and all this effort should deserve a reward. And maybe now this is within reach: if the funding agencies do not throw in the towel (and I'm convinced they will not, even if they purse their lips), advanced detectors will be built and will work, and first detection could take place soon (within ten years). This would mean to have really obtained something. I hope this will happen sooner or later (better sooner): for the taxpayer, represented (we hope) by the funding

agencies, for the science, for those, including me, who have worked so much for it, and for those who are still working for it. And perhaps there is also still something that I can do, who knows. Arriverderci zu everybody.

**This is a famous Bayern dialect sentence by Franz Beckenbauer, the soccer star, that is often repeated and considered very witty. In official German it is: "Schau'n wir mal, dann she'n wir schon" and in English: „Let's have a look, then let's see“.*

GOOD NEWS!

Welcome to **Cosimo**, born October 25th 2008, and our congratulations to Giovanni Losurdo and his partner Angela!



... and welcome to **François Joseph**, born November 7th 2008, and our congratulations to Dominique and Marie-Caroline Huet, parents for the 5th time!

