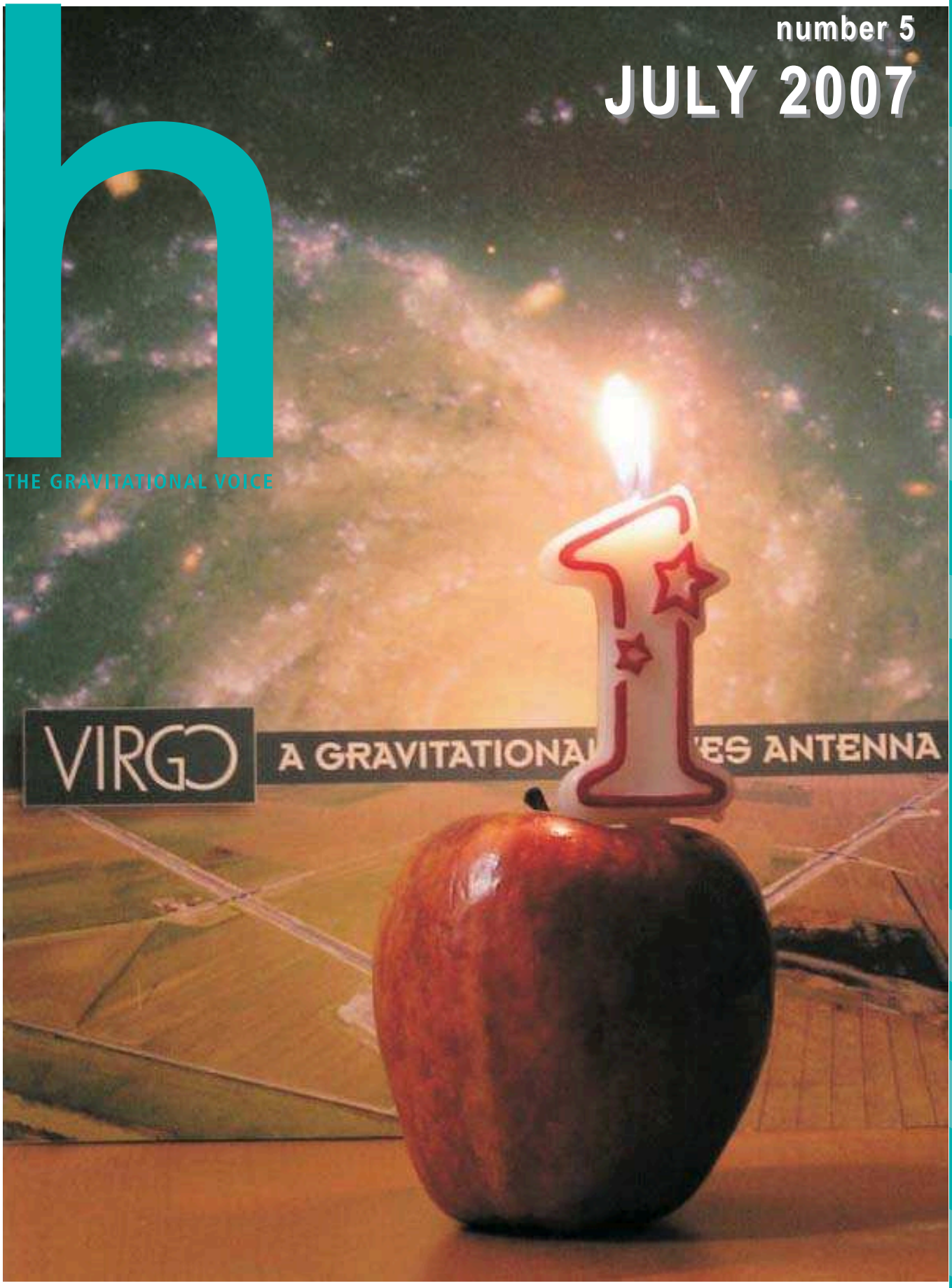
number 5
JULY 2007

h

THE GRAVITATIONAL VOICE



News from EGO and VIRGO

NEWS FROM THE SITE

LSC VIRGO Joint Meeting & Press Conference
Virgo Science Run 1

LIFE IN CASCINA

The new main building of EGO and Virgo
3rd EGO/Virgo Biathlon Relay Run

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

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

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EDITORIAL

h-APPY BIRTHDAY!

Issue number 5 of h is the first one of year 2. As some devote readers may remember, the very first one came out in July 2006 with a cover celebrating the second EGO/Virgo Biathlon Relay Run.

The past year has brought many changes and news in both Virgo and *h*.

Regarding Virgo, you'll find all the technical details in this issue's column by R. Passaquieti, describing at length its progress.

As for *h*, we started full of enthusiasm slightly over a year ago. We have gone through different phases and, at the same time, changes in our small editorial staff.

The initial team soon lost one of his founding members, G. Losurdo, on account of the increased workload after his appointment as Advanced Virgo Coordinator (*ad majora*) and B. Lopez is now saying goodbye too, without whom *h* as we know it simply would not exist. As a matter of fact, he came up with the original layout of our newsletter. In addition, he patiently ended up working weekends on every issue we have had so far putting up with columnists sending their pieces in only few hours before *h* was due to come out, but somehow managed to never miss a deadline.

Luckily for us, others chose to give their contribution to *h*. In strict chronological order, the first one to join in was G. Hemming. In Gary's case probably we should say he was literally drafted with the specific goal of making our helpless English sound more acceptable. Then he could not resist the pull to start writing himself and the Bicycle Tour columns in the Out and About Section you have been enjoying bears his signature, not to mention Virglish, our popular hall of shame. The latest entry is S. Perus, who not only has brought the French touch we needed in our staff, but she also gracefully volunteered to take up where B. Lopez left and invested her time in learning the tools of the trade to bring you this issue of *h* in the layout you can appreciate. You'll find Severine's first column for *h* as editorial staff member in this issue.

At the end of its first year of life, we hope you have found in *h* a pleasant read and a useful source of information to understand what is going on here on site and in the Virgo community in general. For sure, we have had fun writing for it and putting it together.
With rumors about the Virgo collaboration getting even larger soon, we hope the same will happen for *h*, with more writers playing journalist willing to talk about life in the gravitational wave community from as yet unexplored angles.

Meanwhile, we hope to have some feedback from our readers to help us in making of *h* an even more captivating newsletter.

F. NOCERA

Announcing VSR 1

A successful press conference

The timely and smooth beginning of the first Virgo Science Run was announced press conference held at EGO on May the 22nd.

Great care was taken in underlining the double significance of this event:

- the start of a long term Virgo data taking period
- the full data sharing between Virgo and LIGO (including GEO600).

The importance of the first issue marks the achievement of a sensitivity close to the design one on a large fraction of the frequency interval, enabling Virgo to contribute significantly to the data collected worldwide. Something that EGO and Virgo strongly wanted and owed to CNRS and INFN.

The second issue marks the quality of the performance of Virgo and the confidence gained from the LIGO Scientific Collaboration. The coherent analysis of data from the whole network of instruments will provide the capability to observe, with unprecedented statistical confidence, the coalescence of binary black holes and other violent astrophysical events. The arrival times of GWs to the detectors will allow the source position in the sky to be spotted.

The high level of institutional representatives and the number of French and Italian journalists, together with several distinguished Virgo and LSC scientists, contributed to the success of the event. The question answering time was very lively and was extended into the lunchtime period, during the site visit and beyond. We had interviews diffused on line and off line with Italian and French national radio. TV broadcasts and articles are still coming out on most diffused media.

The press conference was prepared in tight collaboration with the press offices of CNRS in Paris and of INFN in Rome. To the journalists, in addition to the usual EGO/Virgo brochure and DVD, a dedicated document on VSR1, the VIRGO/LSC MoU and the coordinated upgrade plans were distributed. A flyer summarizing the basic concepts on gravitational waves and Virgo was developed to this purpose with the INFN press office.

A large part of the success of the press conference was due to the tireless effort of one of the members of the h editorial team (SP) and to the bright sun of May 22nd.

C. BRADASCHIA

The LSC VIRGO Joint Meeting: a value-added meeting!

On February 15, 2007 the MoU between LIGO and VIRGO was signed, opening the way to a 3-year (at least) period of collaborative work and data sharing, punctuated with numerous joint meetings.

After the first LSC VIRGO Joint Meeting, held last March in Baton Rouge (Louisiana), the European rendez-vous of the LSC and VIRGO collaboration was planned for May, in Cascina.

Thus, EGO organized, in cooperation with the Virgo spokesperson, the first Joint meeting in Europe, scheduled to take place just after the launch of the first long Science Run. Hosted in the Eurohotel in Cascina, the meeting gathered together a total of 133 scientists: 76 belonging to the Virgo Collaboration and to EGO, 30 from LIGO, 21 were members from GEO and 6 came from other institutions.

The first half of the week was dedicated to face-to-face meetings (f2f)

focusing on data analysis, with the participants split into different groups according to their interests. This kind of meeting is quite new for Virgo, but very effective at really bringing together people working in the same field, enabling them to analyse their work in great detail – a very important issue for data analysis.
The second half of the week was dedicated to plenary sessions and discussion on the status of the respective detectors and other technical topics. We won't summarise the entire meeting, but all of the presentations can be accessed on the meeting website. To access the presentations it is necessary to login, but the generic ligovirgo user works fine.

Having been "on the spot" almost the whole week, we had many occasions to gather comments from the participants. Many of them expressed their satisfaction about the general organisation and the meetings themselves.

Beyond the scientific scope of the meeting, this kind of event remains a great opportunity to meet people from other countries, cultures and backgrounds and it has been a real pleasure to witness the spirit of open-mindedness demonstrated during the whole week.

The LSC-Virgo Joint Meeting has been a very lucky one. It was the first meeting in Europe since the two collaborations merged, only a few days after the beginning of the VSR1 - the first scientific run in coincidence with LIGO. The run has been blessed by: a high duty cycle, improvement in the Virgo sensitivity, large resonance in the media, good weather and good food! We have in mind two Italian proverbs: "Se son rose fioriranno" (If they are roses, they will flower) and "Chi ben incomincia e' a meta' dell'opera" (Who makes a good start has done half the work). You make your own conclusions.

A. DI VIRGILIO, S. PERUS

Virgo Science Run n.1

You have to walk before you can run

Virgo has been collecting scientific data since the 18th May at 21:14 (UTC). This date is very likely destined to constitute a fundamental milestone, both in our life experience and along the path towards the detection of gravitational waves. After this forceful sentence let us make a brief review of the history that has preceded this event; a way to walk along the paths of memory with a shining view of the horizons, forgetting all the traps in the ground and the round trips that sometimes have made the sky a bit darker. But, what kind of satisfaction could we feel now without having dressed the cloths of frustration, desperation and exaltation?

The first "*Virgo Science Run*" (VSR1) is the last of a long series of much shorter preparatory data takings that have taken place over the past few years. Each of these short runs has systematically followed the gradual implementation and set-up of the control loops concerning each subsystem that composes the actual detector. Thus with time Virgo has gained both in complexity and in strain sensitivity. Meanwhile the detector commissioning entered progressively into night-time!

The full story of this data taking series is quite long, but keeping the style a bit more telegraphic I hope to avoid boring you.

The starting point can be placed at the time of the first *"Engineering Run"* E1, during the 21st - 24th September 2001, when in the so called "*Central Building*", the central area of the actual Virgo detector, a "*Simple Michelson"* interferometer was put into operation. The series of the engineering runs reached its end with E4, during the 12th - 15th July 2003, when the first "*Simple Recycled Michelson"* could collect its data successfully. Many of us remember well how reliable our software was and how automated were the operations. The shining horizons keep us far from further consideration on these points.

The commissioning of Virgo started in September 2003, after the construction of the two 3km long arms infrastructures and the complete installation of the full Virgo interferometer. This activity was accompanied by a total of seven

"Commissioning Runs" (C#). Progressively the detector was running with optical configurations of increasing complexity. In the first commissioning run C1, during the 14th – 17th November 2003, only the North arm Fabry-Perot cavity was aligned and kept locked at the resonance. Starting from C5, during the 2nd -7th December 2004, up to the last commissioning run C7, during the 14th – 19th September 2005, Virgo was able to run in almost definitive recycled configuration. In C6 the automation of the procedures to achieve the locking was yet at its embryonic stage, but many of us were already dreaming an *Automa* which would have been able to lock by just remotely pressing a button, if possible hundreds, even thousands, of kilometres from Cascina. Some others were thinking about *ALP* and human *Operators*. Even if I am quite convinced that these were not the majority of us it is a matter of evidence that Alp and Operators are actually driving Virgo.

As time passed, while still walking with uncertain steps, it was also decided to perform, from time to time, some 8 hour *"Mini Runs"* (M#). For the pleasure of the run organizer a total of eleven mini-runs would take place during Friday afternoon commissioning shifts: from M0, the 24th February 2005, up to M10, the 23rd June 2006. These data takings were mainly intended to provide snapshots of the short–term improvements made by the various on-going subsystem upgrades and to test the overall detector robustness.

In September 2006, while the detector noise characterization phase was progressing, and everyone could enjoy the marvelous growth of colored multi-plot graphs of the noise budgets, it was decided to push forward with the transition from commissioning runs to scientific data takings. At that time it was with even greater pleasure that the run organizer planned a series of "*Weekend Science Runs*" (WSR), with the general agreed aim to collect data during some dedicated weekends, without performing any experiment, apart from well programmed calibrations and hardware injection. The intent was to stimulate progress in the noise hunting activity, to produce even more noise-budget graphs, and to test the data-analysis pipelines on real scientific data. Moreover the collaboration was called to be trained and to think about the organization of a longer scientific data collection period in coincidence with GEO and the three kilometric baseline LIGO detectors: the two H1 (4km) and H2 (2km) in Hanford, and L1 (4km) in Livingston. At that time the joint collaboration with LIGO was still in its embryonic stage, in any case soon the hypothesis of a long term run in spring 2007 was seriously taken into account. A total amount of 10 weekend science runs were performed, from WSR1, during the 8th – 11th September 2006 up to WSR10, during the 8th - 11th March 2007.

Of course also during this period the noise hunting activity and the detector upgrades, lead by the commissioning, did not cease to produce their beneficial effects both on the detector sensitivity and robustness. In figure1 is reported the time evolution of the Virgo strain sensitivity from C1 up to VSR1. In March 2007, once the joint detection among GEO, LIGO and Virgo detectors was formally stated, the plans for the effective joint detection and data-sharing started. It was no joke to manage the incoming staff all at the same time!

The VSR1 was programmed to last for a minimum period of about 4 months from the 18th May 2007 up to mid September 2007, in coincidence with the LSC S5 run. The run organization was presented after its preparation within the local *"Virgo Run Planning Committee"* (RPC) and the *"Joint LIGO-VIRGO RPC"* (JRPC).

For the first time the Virgo collaboration had to face real long term run organization. A consistent fraction of physicists, technicians and operators from Virgo groups and from EGO, have been called upon to participate in the scheduled shifts.

VSR1 shifts have been planned to be 8 hours long and to involve at least 2 people: one operator and one scientist. The main task assigned to

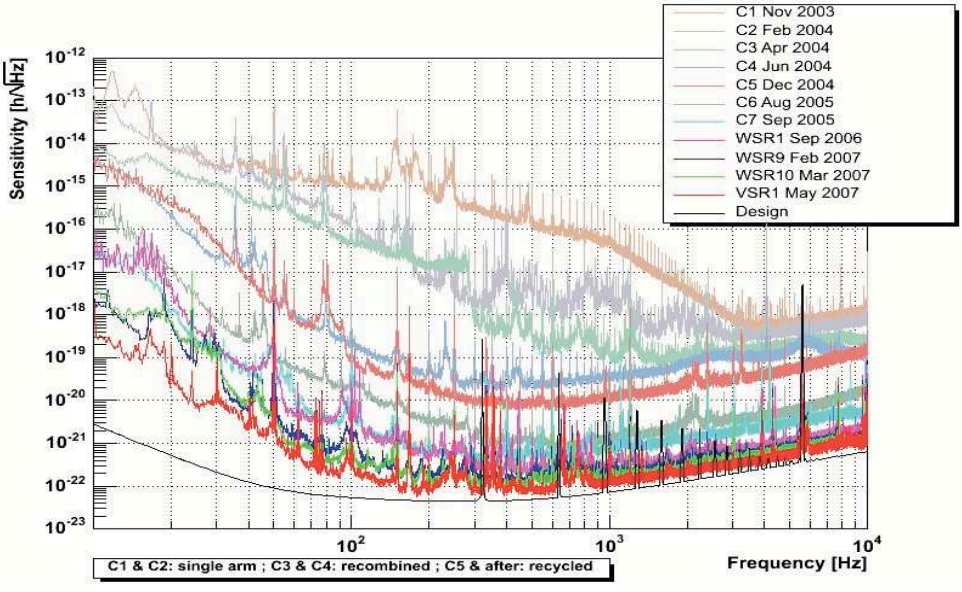


Fig.1-Evolution of the Virgo strain sensitivity as measured during its data-takings since C1.

the operators was to run the interferometer using the automated locking procedures, while the scientists' activity was thought to be focused on monitoring the quality of data using the available on-line data-analysis tools.
The run coordination has been assigned to weekly run coordinators appointed by the run organizer. At the moment the VSR1 planning foresees 378 shifts, of 8 hours each, covering the full 24 hours/day. Shifts have been attributed to each group according to the fraction of members in the Virgo papers author list. About 140 people where called upon to participate.

In the end I would say that the Virgo groups responded well to this call. It was almost not necessary to raise my voice, but with a certain dose of reciprocal comprehension and fair play all of the schedules were filled in time. The per cent distribution of shifts among the Virgo collaboration groups is the following:

Infn PI	18%	Infn Roma1	6%
EGO	16%	LAL	6%
Infn NA	11%	Infn PG	6%
OCA	9%	ESPCI+LMA	6%
LAPP	8%	Infn Roma2	4%
Infn FI/Urb	7%	NIKHEF	4%

The VSR1 organization planning, trying to minimize the recovery time from possible detector failures, has foreseen also the presence of experts on call for critical detector controls and subsystems. The following items have been selected:

- 11 Virgo ITF Sub-systems: Alignment, DAQ, Detection, Electronics, Locking, Global Control, Laser &Injection, MSC, On line Computing &Network, Software, Suspension Electronics & Software
- 4 EGO Site Services: Network & Global Security System, Site Infrastructure-Conditioning, Site Infrastructure-Electricity, Vacuum.

Obviously, running the interferometer, and collecting data, has actually become the dominant activity at the Virgo site; nevertheless some room is left for detector maintenance and commissioning. The planned maintenance activity takes 4 hours per week each Tuesday morning, from 07:00 to 11:00 (UTC), while commissioning has a total monthly time budget of 25 hours. Both these activities have been planned within the JRPC, in agreement with the LIGO and GEO run coordinators.

Up to now the VSR1 has shown a satisfactory detection performance and good detector robustness. Long term series of detection periods, up to about 59 hours, have been observed. The interferometer has been kept locked even during critical weather conditions. Moreover it was not required to reduce significantly the human presence at the detector site. Preventative measures where only taken to govern the access and movements inside and around the main detector buildings.

The actual VSR1 *"Science Mode"* duty cycle, measured since the 18th May, is about 84.8% (see figure 2). Meanwhile, the *"Locking Step"* duty cycle has reached a value of about 87.1%.

During this first part of VSR1 the typical average oriented NS-NS inspiral range reached by Virgo was of about 3.4 Mpc (see figure 3).

Finally, before leaving I ask you gently to accord me further epigraphical licence. I express to everybody my best whishes to take good data, hopefully leaving your footprints in the muddy path that is the epic history of science!

R. PASSAQUIETI

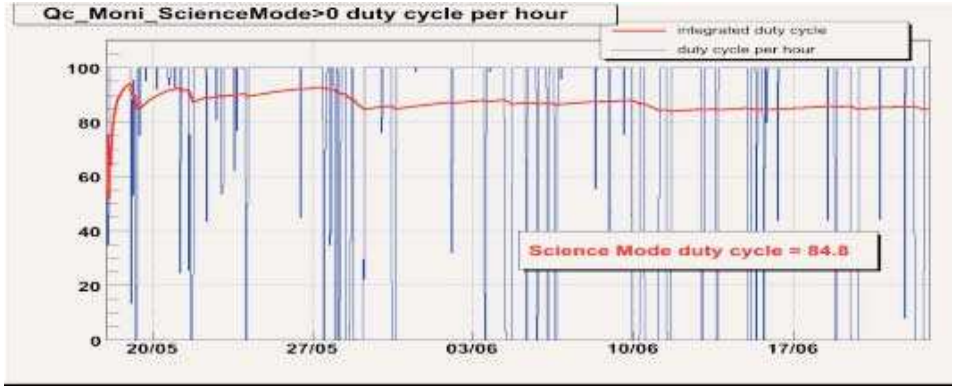


Fig. 2 - VSR1 "Science Mode" duty cycle since the 18th May 2007, as measured up to the 24th June 2007

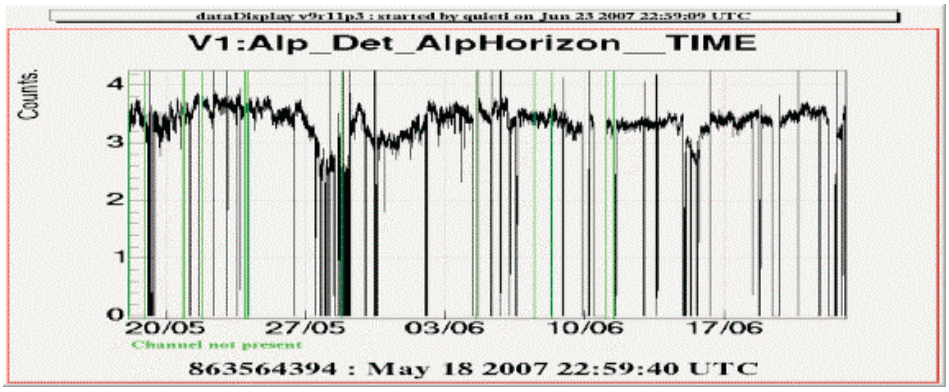


Fig. 3 - Time trend of the VSR1 average oriented NS-NS inspiral range (the ordinate is expressed in Mpc), as measured up to the 12th June 2007

The Virgo Collaboration meeting of June

The Virgo Collaboration meeting of June took place at EGO from Monday 25th June to Wednesday 27th June 2007. It was the fifth collaboration meeting of the year (one had been held in Baton-Rouge in March), but the first in which a first significant review of the ongoing VSR1 was possible. Actually, apart from some considerations on the locking duration and stability (as E.Campagna, quoting P.Ruggi evidenced, "the interferometer cannot do better than God": 6/7 = 85.7%), no really surprising extrapolation was reported. As usual, when it is not an LSC/Virgo joint meeting, the sessions took place in the first three days of the week. If the program of the Collaboration meetings has always been "demanding", this one has been even more exhausting: noise meeting at 18–19:30, sessions scheduled until 19 (everybody knows that this always means more than half an hour longer), talks unrealistically restricted to 15 minutes, including questions, parallel sessions, and so on. Just have a look at the meeting schedule (https://workarea.ego-gw.it/ego2/virgo/collaboration-meetings/2007agendas/2007-june_25-27th) in order to have an idea of the density of the program. Many people have privately complained about the late sessions, the impossibility or difficulty to participate, and the fatigue at the end of the day.

Considering that there is a collaboration meeting essentially every month, there should be as much effort as possible devoted to reducing the burden of these events, also taken into account that the LSC/Virgo joint meetings are longer and more intense than the usual ones. On the contrary, this meeting seems to go in the opposite direction. Another comment concerns the web page: in the program of the sessions on the web, it would be nice if one could open the presentation clicking on the scheduled talk, instead of being always obliged to look for where the talks are located.

As usual, the main sessions of the Collaboration Meeting were the Commissioning Meeting (Monday afternoon), the Noise Meeting (Monday evening, from 18 to 19:30), the Data Analysis (Tuesday afternoon) and the Detector meeting (Wednesday Morning). Parallel meetings (Data Transfer and Locking) were held on Tuesday morning. Two rehearsal sessions took place, one after the Commissioning and the other after the Data Analysis meetings. A peculiarity of this meeting was that this time it overlapped the STAC meeting, while open sessions took place on Monday and Tuesday morning.

The Commissioning meeting started at about 15:40, almost on time, with about 30 persons being present and a couple of external connections. This session should be considered as quite important, since is a sort of bug report for VSR1. All seven talks were scheduled to last 15 minutes. Almost everybody made the appreciable effort to stay within the prescribed time, with the exception of one talk, which lasted 30 minutes. The session ranged from general reports such as unlock event statistics, automatic alignment problems, earthquake unlocks, to more specific subjects, such as the Napoli phase camera and reference mass Eddy currents, to end with calibration and h(t) reconstructed. Among the most significant highlights of these talks was the evidence that the principal cause of unlocks are now Gc crashes (more than 22%), "followed at wheel" (nice deliberate Virglish expression, literary translation of the Italian "seguito a ruota", almost nobody understood the joke, nobody laughed) by fast unlocks, earthquakes and "other unresolved". In his talk Ettore described his (and Ruggi's) "Columbus' egg" (showing the figure

William Hogarth, (1697-1764)
Columbus Breaking the Egg (courtesy of Ettore Majorana)
1753, Etching

attached to this article) to help in facing the problems of earthquake unlocks: apparently, if the earthquake is not too close to the site, there is the possibility to detect its precursors (some seconds before the shock) and to switch off the GIPC control (inverted pendulum control against wind and sea), which has the drawback of spoiling the attenuation performances of the SA in case of earthquakes. If instead of seconds we were able to detect earthquakes something like one hour in advance, this would be a much more important egg than Columbus' one, a real 'spin off' of Virgo of historical significance.

The Noise and Data Analysis meetings were different from the former ones, since it is possible to perform investigations on very long data stretches. Among the most interesting outcomes of the Noise Meeting are probably the results presented by Irene and Julien, who showed that the electrical box containing the cooling fan for the lamp used by mirror local controls proved to emit strong magnetic noise and produce an effect in the dark fringe around 50Hz. Also interesting was the accurate work performed by Luc di Gallo (a summer student), who described his patient and interesting analysis work of identifying the origin of an intense "wandering" peak (Luc managed to locate it at one of the terminal mirror suspensions).

The Data Analysis meeting represented on the other hand the point of the first month of Virgo science data handling. The burst, coalescing binaries and pulsar groups contributed in particular in starting to identify possible vetoes based on the identification of glitches in the dark fringe as correlated with and actually caused by glitches in auxiliary channels. The pulsar group worked mainly at cleaning the spectrum of known resonances (possible BS suspension wires) and harmonics (interesting very high harmonics of low frequency lines and timing board and cameras harmonics, which cannot be mitigated during the run). There was interesting discussion with the detector and commissioning scientists, both on the subject of correlated glitches, and ways to delete them, and on the line identification and potential subtraction. No gravitational wave detection has been reported yet, but data analysis work is going on promisingly.

In the the Wednesday morning Detector Meeting, attended by the same 30 people, almost all of the talks were dedicated to problems and upgrades, which will very likely concern Virgo+, such as PMC and the Virgo+ amplifier status, the etalon effect and possible consequences for Virgo+, progress of the thermal compensation system design, design of the new dielectric reference mass, simulation of the input mode cleaner with mirror maps, status of the design of the new parts of the input mode cleaner) the status of the new quadrants electronics for automatic alignment and vacuum intervention for Virgo+. Particularly interesting was the design of the dielectric reference mass presented by Paola, in which a new material (Tekapeek) was introduced, and the proposal by Antonio to consider the (not trivial) possibility of the detection Brewster and replacing it with a cryogenic trap.

The Tuesday parallel sessions in the Council room (during STAC open session) were about Data Transfer and Locking. The Data Transfer meeting (9:15-10:30) was mainly dedicated to starting a discussion about a general reorganization of the data transfer to the Bologna and Lyon archives, which will be needed to provide a more stable and manageable solution in the mid term (there is presently a delay of 12 days in the data transfer). Having been strongly requested for several months by commissioning people, finally a Locking meeting (11:00-13:00): in particular G.Vajente proposed his ideas for improvements or investigations (better PR gain calibration, better measurement of the optical matrix, sensing with B2_ACq for Mich control, Beta improvement and optimal locking point achievement).

In the first of the two Amaldi 7 rehearsal sessions, H. Heitmann, reported on commissioning; in the second one, F. Marion reported on Virgo status and G. Guidi on LIGO/Virgo searches for compact binaries. Probably, owing to the importance of the Amaldi conference, the room was unusually crowded and there were many remarks and suggestions. The last talk provoked a long discussion about a very sensitive subject: it turns out that the LSC prefers to remove any quantitative information from viewgraphs, unless they are classified at least as "preliminary" (which means that it is subject to change by not more than 10%). It is clear that the LSC has already entered into the "discovery" mood, which is still felt to be distant by Virgo. We have to digest this matter and understand what is a reasonable compromise; it is, anyway, a good omen for coming success.

The Collaboration Meeting ended after the Detector Meeting, on Wednesday at about 13:30, and was followed, as usual, by the VSC.

STAC open sessions

As the STAC meeting took place at the same time as the Collaboration Meeting, it is worthwhile to spend some words covering it from a Virgo week perspective. The first open session of the STAC took place on Monday 25th, the second on the morning of Tuesday 26th. About 25 Virgo people were present. This was the first time for the new STAC members Christophe Salomon, Guido Zavattini e Francesco Ronga.

Monday morning was essentially dedicated to reports about Virgo (B.Mours), VSR1 (R.Passaquieti), commissioning (E.Tournefier) and Virgo+ (M.Punturo). Several

questions were asked by the STAC, mainly concerning the implementation plan for the upgrades (starting from Virgo+), and the definitions of the upgrade configurations.

F. Menzinger was the first speaker of the Tuesday morning session, reporting about EGO achievements and status, mentioning in particular the effort for the proposal of the third generation interferometer ET (Einstein gravitational gave Telescope) to the European Commission. At the end of the Filippo's talk, Shoemaker, in the name of the STAC, prompted a well-deserved lengthy applause for the activity of Filippo in EGO, since this will be his last report to the STAC.

At the end of C. Bradaschia's talk, when he pointed out that *h*, the gravitational voice, has arrived at its first year of publication, there was forthcoming a significant interest in our review. In particular it was asked if it would be possible to have a sort of subscription (for free unfortunately, nobody is ready to pay a penny, stingy!), or to be informed, by a mail list, when the new number is published, or possibly have the file sent.

This STAC meeting will be particularly relevant for the future of our research, in particular for the next decisions about Advanced Virgo (AdV). G. Losurdo, as AdV coordinator, gave a very clear presentation about it. In particular, he showed that, when comparing Virgo+ and AdvLigo, Virgo+ clearly would not contribute once Advanced Ligo was working. The next months will therefore be decisive in convincing the institutions that AdV is crucial to make science and be on line with AdvLigo, also underlining that AdvVirgo is not a new detector, it is an upgrade of an existing one, with a lot of work already done. So, a relatively cheap effort to make real new science, since in 2014 the range for neutron-binary star coalescences GW detection could be 175 Mpc, more than ten times larger than now: this will allow to go, beyond bare GW detection, to real GW astronomy (more than 1 expected event/week). Shoemaker encouraged not to propose a "preliminary design", rather a "conceptual design". STAC members observed that AdV seems in a good position, and financing is likely, mainly if a realistic implementation plan can be proposed in November.

P. LA PENNA

2nd VESF School on Gravitational Waves

The 2nd VESF School on Gravitational Waves was held at the EGO site from May 28th to June 1st. Once again it is possible to say that the school was a big success. 27 students attended the school, representing institutions from 8 different countries (France, Germany, Greece, Holland, Italy, Spain, UK, US). Most of them were PhD students.

Though the structure of the school remained the same, the program for this year was slightly different: the traditional opening lecture "A primer of general relativity" was cancelled, assuming that most of the participants already had a background in general relativity. This gave more space to data analysis topics, in the year when Virgo has started data taking. New topics were also introduced in the program: L.Piro gave a lecture on gamma ray bursts, while S.Husa, from Jena University, reported about the recent results in numerical relativity on the coalescence of black holes.

As in 2006, a two-hours session was dedicated to the "Students short talks". It was again a good success: both experienced talkers and young students at their first presentation participated. The prize for the best talk was awarded during the social dinner to Jonathan Downing, a Canadian student at Heidelberg University, who gave a talk on "Compact Object Binaries in Star Clusters with Post-Newtonian Dynamics". The talk of Sarin Pradeep is worth mentioning: he dared to talk about science and philosophy proposing "101 of the most important problems in Science, and How to solve them".

The students, according to the evaluation forms they filled in, were very happy with the lectures, the organization and the logistics. The mechanism is now well lubricated. So perhaps the moment to change has come.

G. LOSURDO
DIRECTOR VESF SCHOOL

Visit of the EPS Executive Committee

EPS, the European Physical Society (www.eps.org), is an organisation that represents all of the European local Physical Societies and more than 100000 European physicists. The EPS Executive Committee came to Pisa during the week of the 11th to the 15th of June for its 'Journee de reflection'.

On Thursday the 14th the President, Fritz Wagner, and the vice-President, Ove Poulsen, along with other components of the ExCom visited our Virgo site and met our Spokesman, Benoit Mours, the EGO-Director, Filippo Menzinger, and Carlo Bradaschia, who led a tour of the antenna. They were very impressed with the beauty of the place, but much more with the remarkable level of our work. In his last e-mail Fritz says: "It was nice to see VIRGO. It is indeed interesting and exciting and I hope that rather soon something cosmic happens".

A. DI VIRGILIO

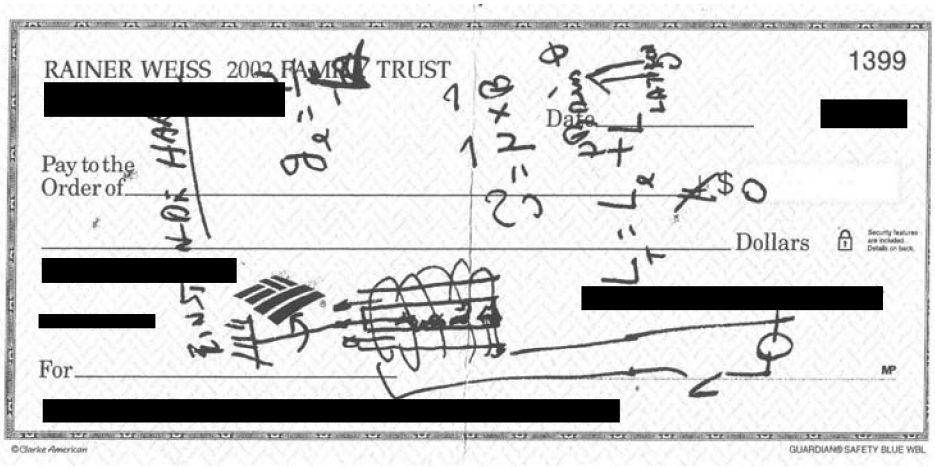
A physicists note pad

There are a lot of stories and anecdotes about physicists feeling compelled to write formulas or to draw sketches and graphs, when in discussion with colleagues. If you pay attention in the cafeteria of any laboratory, but also in nearby restaurants, you will always find paper napkins and tablecloths that have been fully decorated.

The same happened during the social dinner of the LSC/Virgo meeting in Cascina. Unfortunately the only paper available was the menu, which had already been promptly filled by Albert. In front of us, at the same table, two "emeriti" were engaged in lively discussion: Rai and Adalberto. Without paper they were in big trouble; so, what to do? Rai, the quintessential physicist, brilliantly solved the impasse: he too his cheque-book from his pocket, tore a leaf from it and wrote happily with a shining smile.

Adalberto preserved the cheque as a nice recollection and we now have the chance to show a copy to our readers.

C. BRADASCHIA



The new main building of EGO and Virgo

The civil engineering works are now expected to be completed by the end of June according to the main contractor, Consorzio Etruria. After that, in order to put the building into use, we will need to complete the connection to external services such as electricity, water, drains and to the internal networks of telephones and computing. The auditorium and meeting rooms have to be provided with audio-video equipment and audio-video conferencing tools, the canteen has to be fitted with kitchen equipment and tools and the entire building needs to be furnished. All this finishing work should take two-three months and then the big moving of people may take place.
The grounds around will have to wait until the end of the science run before we may give them a final shape.

Today the new building looks complete from the outside, but works are still going on inside, where doors have to be installed, networking will soon start and the auditorium is in course to be fitted with flooring, seats and audio-video. Furniture for the offices is still to be delivered.

What will EGO and the Virgo collaboration get:

True offices for all those who at present are hosted in the around twenty offices located in temporary structures (i.e. 21 offices and 2 small laboratories in box-offices and containers) including some 20 EGO staff, 6 PhD students and 4 Virgo groups. Indeed, these structures eventually will have to be dismantled since the local authorities tolerated them only on a temporary basis. In the new building there will be 28 offices, one canteen, one auditorium, two meeting rooms, three medium-size laboratories and an exhibition-reception hall.
The main guidelines in the room assignment foresee that:

- Persons of the Virgo collaboration and of EGO will be distributed in both the existing and the new office buildings.
- Each member of EGO personnel will have a desk, including staff, seconded personnel and consultants.
- Persons more connected with the everyday work on the interferometer will be preferably

located in the present office building.

- Two to three rooms will be kept for future joining groups.
- The larger Virgo gro ups will have one more room each.
- Persons that work in frequent collaboration should be in offices close to one another.

The canteen will be equipped in such a way as to permit food preparation in situ in order to have at least the first course freshly made. It is expected that it will become operative by the end of the year, provided the required authorizations by the local competent authorities are available.

Moving to the new building will be done gradually to avoid any serious interruption of activity. It is expected that it may start around September, as soon as the offices and laboratories have phone and network connections ready, and be completed by the end of the year.

F. MENZINGER

Prototype gas spring Superattenuator - one of the first two fully working superattenuators, built in Pisa in 1987, exhibited in the entrance hall of the new Main Building

3rd EGO/VIRGO Biathlon Relay Run

The EGO-Virgo Biathlon Relay Run is gaining ground among Virgo's traditions. The one held on June 26th was the third of what we hope will be an even longer series. An additional stimulus to "be there" was of course represented by the planned buffet party afterwards, with the sweet memories of last year's one still lingering on.

As in every event making its first baby steps, some tweaking is probably required to make it more appealing to the prospective participants, whose number decreased compared with the previous edition.

Corridor talks (free translation from Italian and EGO's version of *through the grapevine*) seem to single out a major snag: the 3 km-run leg. This is perceived as an overwhelming impediment for people who, generally speaking, are more likely to work for 18 hour stretches than to park more than 10 meters away from the building entrance. Perhaps next time there can be a less physically demanding effort required of our "athletes" (shorter interferometer?).
Nevertheless, their colleagues, families and friends supported them "all the way". Standing still, though.

Now some details about the competition's report.
Six teams were on the starting line ready to do their best with the not-so-secret goal of defeating the Naples team, which had won the two previous editions. The first leg was a 1km run along the West arm, followed by a second 2 km run leg, which brought our athletes to the West End Building. A 6 km bicycle leg to the North End Building followed and finally the fourth leg, 3 km run all the way to the finish line.
Naples (Pardi, Capozziello, Di Fiore, Calloni) started strongly and led the race for the first and second legs,

although the other teams followed closely behind. The third part is the one in which distances among teams grew larger. The Rest of the World team put together with an Italian member of the STAC and guys from Netherlands, Canada and US (Zavattini, Swinkels, Howe, Draskovic) was able to close the gap and take the lead of the race. It appears a couple of mechanical accidents with their bicycles slowed down the *h*+ (R. Cavalieri) and LalLapp (F. Cavalier) teams, making it impossible for both to harbour dreams of finishing among the best. Naples still had a trick up its sleeve and, although lagging behind at the beginning of the fourth and last leg, they were able to reach the finish line over a minute before the Rest of the World team. The bronze medal was won by the Infrastructure team (Digallo, Romboli, D'Andrea, Richard).

Fourth place went to *h*+ (Bradaschia, Perus, Cavalieri, Hemming), fifth to Roma I (Perciballi, Antonucci, Palomba, Braccini), and sixth to LalLapp (Buskulic, Rolland, Cavalier, Masserot).

In the end, Naples won hands down once again, much to everybody's frustration (apart from Naples', of course).

While amiably chatting during the pleasant dinner that followed the event, this reporter overheard plans to sabotage the three-time winning team next year somehow (deflating a bit the tires of their bicycle was the least invasive and least cruel of them).

Congratulations to all teams and

participants and special thanks to the Organizing Committee. See you all again next year.

F. NOCERA

Virglish: lesson two

As they say in Virglish business, 'Hallways leave them wanting more'. With this pearl of wisdom in mind, it had been my intention to take a break from Virglish in this issue of 'h'. Yet, such has been the throng of voices clamouring for more, I feel obliged to embark upon our second lesson.

In this issue we will be analysing four classic Virglish phrases in some detail, thus allowing us to come to a fuller and more balanced understanding of how to not only get by, but to thrive with the language. So, on we go…

First up this time around is the aforementioned Virglish word, 'Hallways'. In English this is simply a pluralised way of saying 'corridor', although the Cambridge English Dictionary even goes as far as to also use the word 'entrance' in its description. However, what it neglects to say is that in Virglish it is also synonymous with the word 'always'. Surely you've heard the famous Virglish version of the Monty Python's Flying Circus song, 'Hallways look on the bright side of life'. If not, I guarantee that you are missing a treat.

Next up, 'We put the hydrogen bomb under the Injection Tower and explode it'. Now, I'm tempted to begin explaining this Virglish phrase with the Italian imperative, 'Occhio!', meaning 'Watch out!'. It's best to take a moment to explain the subtleties of this Virglish phrase to avoid any, potentially catastrophic, consequences. In English, this phrase would be 'We will put the hydrogen canister beneath the Injection Tower and open the valve'. Note the important difference between 'canister' and 'bomb', and how the Virglish word bears a closer resemblance to the Italian 'bombola' than its English equivalent. Also note the use of 'blow it up', rather than 'open the valve'. See how confusion may arise? It's examples such as this that really help us to understand just how fundamentally different Virglish is from English and how developing a complete understanding of it can, at times, be akin to navigating a minefield – almost literally in this case.

For anyone unaware, actually carrying out the previous phase to the letter would bring a swift conclusion to the Science Run.

Our third Virglish phrase is a complicated one: 'ITF still to be unstable'. In English this would mean that the ITF was, and always has been, stable. It could also infer that we are expecting some instability, but this is not necessarily the case. However, the meaning in Virglish, as usual, is quite different. This really translates into English as, 'The ITF is still unstable' – the complete opposite. Yet again we see how quickly confusion can arise to the untrained ear of the casual Virglish observer.

Our final Virglish phrase of this issue translates into English as 'Sheet of paper'. Note the use of the double 'e', which serves to render the vowel sound in the middle of the word longer. In Virglish, this sound is much, much shorter and, as such, can lead to much confusion, and occasional embarrassment, when in discussion with non-Virglish speakers.

On that note, we draw our second Virglish lesson to a close and I am reminded of a Virglish proverb, which seems fitting in the context of our subject matter this time around. Remember, 'things are not hallways what they seem'.

G. HEMMING

Route 4: A rolling stone gathers no moss

Distance: 12 km
Duration: 60 minutes

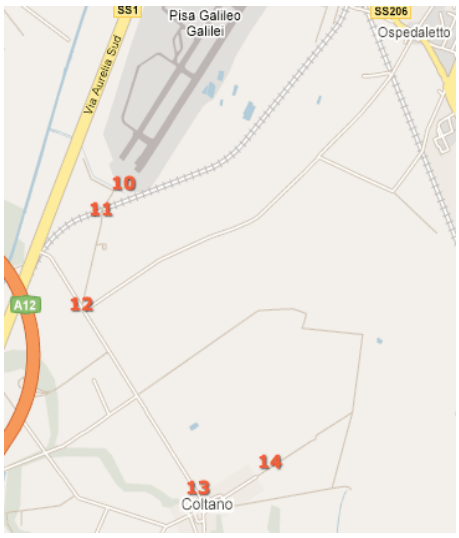
First and foremost, a quick mention for Bas Swinkels, John Draskovic and Kiel Howe, for daring to be the first people to follow this column literally and get Out and About. Congratulations!

Now, in a change from our previous excursions, we will not start at the gates of EGO for this route, but will instead begin from Ponte della Vittoria in Pisa. For those unaware how to get to this location from EGO, the information is available in the first Out and About route, which can be found in 'h' issue number two.

This time around we will be taking our lead from the Letter to the Editor received in the previous issue of 'h', from the esteemed Director (ahem) of the Guglielmo Marconi World Heritage Museum. Inspired by Dr Day, we will visit Marconi's house in Coltano, just outside of Pisa. In 1903, Marconi chose Coltano as the location for the radio station to be used in his work and it is today, although a little run-down, a site of interesting historical value.

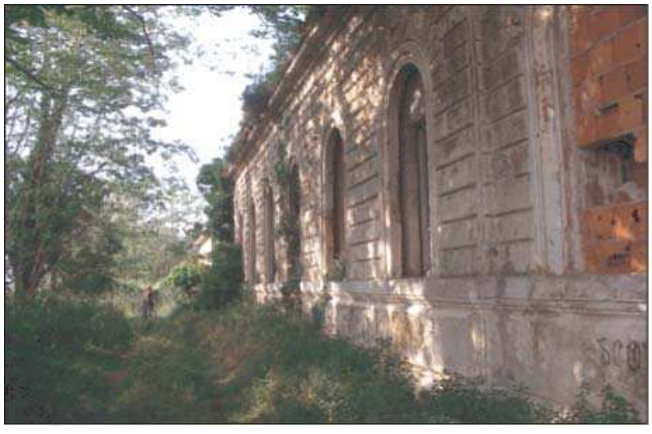
We begin on Ponte della Vittoria (1), facing south and take an immediate left along Lungarno Guadolongo, which is always filled with parked cars. When we reach the end of the asphalted road (2), we double-back on ourselves to the right and take the road that descends down to Via Carlo Cattaneo. Once on this road, we cross-over and take the covered alleyway that brings us on to Via Marco Polo, which we follow neatly round until we reach Cavalcavia San Giusto (3), which we take on foot, as it is one way, up on to the bridge itself and cross directly over the railway line. Once over the bridge, we descend and take the second left turn, Via Giuseppe Montanelli (4), which takes us away from the more traffic-filled areas and into relative calm. We stay on Via Montanelli for some distance, before taking the fourth turning on the right, onto Via della Ferrovia (5), which takes us underneath the FI-PI-LI and into the real tranquillity of Via Cariola (6).

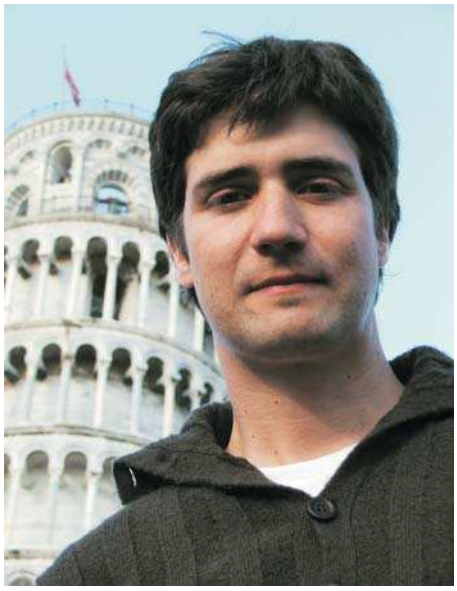
Almost immediately, we arrive at a T-junction where we head left. We are now up on the airport perimeter and are surrounded by an array of ercules transport planes as we wind our way through the peaceful countryside. We soon meet Via Dogali (7) and take a right, continuing to skirt the airport perimeter. After approximately 500m we take a right onto Via di Mezzo (8), which is little more than a dirt track and which eventually turns left and becomes Via Enrico Pezzi (9).
We are now running parallel to the airport runway and will likely see a few planes coming into land – no doubt packed with visitors eager to join us on our visit to Coltano. We eventually arrive at the end of the runway (10), where there is always a collection of keen plane-spotters. We carry on, however, and head over the bridge (11) which passes over the railway line and onto the imaginatively titled Via dell'Aviazione. This road is straight and peaceful and also dead flat, so makes for a nice pleasant change from the bumpy gravel road alongside the airport.
After a couple of kilometres we meet Via del Viadotto (12) and head left. This road is busier, so we need to pay a bit more attention, but it's not too bad. It also brings us, after 2-3km, straight into the Pine-covered shade of Coltano (13).



On another day we may choose to take a pause here and enjoy the delights on offer in and around the village, such as bumping into Mario Favati, but today we have another objective and, with that in mind, we take an immediate left and head onto Via Palazzi, which brings us, after a few hundred metres, to Marconi's old stomping ground (14) and our destination.

G. HEMMING





B. Interviews B.

B: *Hello B., tell us about your experience working at EGO and Virgo.*
b: Well, I had a great time doing a lot of interesting things, I knew great people and...

B: *Ok, ok, that's enough; we don't want to bore our readers. Couldn't you tell us something shocking?*
b: Hum, let's see... I remember that when I just arrived I played with the master timing server at the test facility when I suddenly realized that I was logged on the wrong machine and...

B: *Yes, yes, quite shocking. But in reality I was thinking about something more polemic. For example, what has annoyed you most during the past years?*
b: Probably the invisible barrier that becomes generated when people speak a different language on a same table. Is that polemic enough?

B: *Hum, better let us go on. Try to find a screaming headline, for example, the reason why you are leaving...*
b: Could be "Big-B. Returns to Chile because of Small Baby-B."?

B: *Too cute, too soft, but maybe we*

can fix it. Tell us about the highlights of your stay in Italy!
b: Italian food deserves to be mentioned. It transformed lunch everyday into a culinary event. I also enjoyed a lot the beaches in summer, visits to cities like Rome and Venice, trips to Campania and Umbria...

B: *In reality I was referring to highlights of your professional life, remember that this is a scientific newsletter and not a travel guide...*
b: Oh, sorry. Well, working at a project in commissioning phase forced me to adopt a new, more flexible way of doing things, and to re-think several fundamentals. My professional highlights were the cases when technical suggestions had made finally were considered and put into operation.

B: *I am crying of emotion... after this article I fear that they will throw me out from the editorial staff!*
b: I am sorry for that. Maybe they publish it anyhow...

B: *We'll see. Thank you for this interview.*

Bernhard Lopez

I am Martin Mohan

In the summer of 1989 I had my first taste of working on the European continent when I arrived at the PTB in Braunschweig, Germany to spend a year working on a thesis for a masters degree. The initial problems were to find transport and a place to live in a country where I did not know the language. The work mainly involved writing software in C to control detectors and a laser interferometer and then analyzing the data.

I arrived in Pisa three weeks ago. The initial problems were to find transport and a place to live in a country where I do not know the language. The work involves mainly writing software in C++ to control detectors on a laser interferometer. However having spent a year working in Rome this time I understood a little basic Italian.

After the PTB I obtained a post as a physicist at the Institute for Astronomy and Astrophysics Tuebingen, where I worked for 5 years. I worked in a small team headed by Dr. Eckhard Kendziorra developing readout systems for the XMM and Integral astronomy satellites. At Tuebingen I benefited from working with some very talented and experienced engineers and scientists. I left Germany with an appreciation of German Engineering and a taste for German beer in 1995.

After Germany I spent several years working on engineering contracts in France and Italy mainly for physics research before returning to my native Ireland in 2000 to work as a software engineer at Cadence Design Systems in Dublin. I left research and Cadence and joined the German firm SAP's Dublin offices 4 years ago where I worked in various software support and maintenance roles before I was offered the post of Software Engineer at EGO.

I look forward to my next few years at EGO and the engineering involved in working on one of the most advanced detectors in the world. I had two weeks of mentoring from my predecessor Bernhard Lopez before he left for Chile to work on the ALMA astronomy project. Bernhard has left behind a well planned project done to high standards which I hope to complete. My initial impression of Pisa is that the natives are friendly and the food is excellent. Should I need a break however the countryside around Pisa is beautiful and Pisa airport offers easy access to more exotic destinations. As EGO is still in the process of building a canteen we are offered access to some excellent Italian restaurants at lunch time and my appreciation of Tuscan cuisine is growing.

Martin Mohan

GOOD NEWS!

Many nice events this time! Spring is the time of weddings, and this time it is most definitely true. Our congratulations go to:

***Luca Paoli**, who married Francesca, on May the 6th,*

***Federico Nenci**, who married Erica on May the 27th,*

and

***Lara Coltelli**, who married Pietro on June the 9th.*

And two new kids:

*Welcome to **Fabien**, 3.2 kg and 52 cm, born on May the 10th, to the happiness of **Roman and Claudia Bezuszko**,*

*and welcome to **Giulio**, 2.5 kg and 50 cm, born on May the 24th to the delight of **Isidoro and Eleonora Ferrante.***

PERSONNEL MOVEMENTS
1 March 2006 - 31 May 2007

ARRIVALS

Staff
Martin Mohan
Software Engineer
ITF Operation (Software)

Benjamin Restaut
Student
ITF Operation (Optics)

DEPARTURES

Staff
Bernhard Lopez
Software Engineer
ITF Operation (Software)