

## VATLY NEWSLETTER

*VATLY wishes you a very happy and successful New Year 2010!*

### WORDS OF HOPE (DECEMBER 2009) FROM THE MINISTRY OF EDUCATION AND TRAINING

*The Ministry of Education and Training has given approval to the Viet Nam Academy of Science and Technology to establish the Ha Noi University of Science and Technology. Its construction will start on a 65-hectare site in Ha Noi's Hoa Lac High-tech Park by May next year at a cost of \$100 million, and it is expected to be of international standard. It is one of four such universities the Government hopes to build in the country. One, with German support, is in HCMC, the other two are in Da Nang (Centre) and Can Tho (South). All four would be non-profit, international quality public universities. The \$400 million required for their construction will be borrowed from the World Bank and the Asian Development Bank. The ministry expects them to be among the world's top 200 universities and to help raising the country's education standards to a higher level. The universities, with foreigners making up at least half the staff of their faculties, would be centres for scientific and technological activities as well as international co-operation.*

### CONTENT

This twelfth issue of the VATLY Newsletter, once again, comes late. We apologize to our readers. Our only excuse is lack of time, but it is a bad one, we know. The first item is the traditional **News from the Laboratory** that reviews our activities since last March. It is followed by a report by Diep on a **School on accelerators**, organized jointly by the VAEI (Vietnam Atomic Energy Institute, former VAEC, of which our Institute is part) and the French CNRS/IN2P3, which just took place in Hanoi. Next is an **Interview of Tran The Trung**, a young postdoc trained in astrophysics, with a brilliant academic record, who decided to settle in Hanoi. The issue closes, as usual, with the **Photo Album**.

### NEWS FROM THE LABORATORY

Nhung has just returned from France where she brilliantly defended her PhD thesis entitled *Contribution to the study of ultra high energy cosmic ray (UHECR) showers using the Pierre Auger Observatory (PAO) Surface Detector*. This was a thesis under joint supervision of Pierre Billoir from Université Pierre et Marie Curie-Paris 6 and our Pierre from the National Hanoi University of Sciences (HUS). It was the first thesis ever presented at HUS under such a joint supervision agreement (*cotutelle* in French).

The jury included two representatives from each university. On the Vietnamese side, Tran Minh Tam was in the chair and Nguyen Mau Chung was rapporteur. The French members were Marcel Urban, from LAL Orsay, and Hervé de Kerret, rapporteur. The jury was unanimous to praise the content of the thesis, its contribution to UHECR physics and the quality of Nhung's presentation.



*Nhung defending her PhD thesis*

The thesis is structured in three main parts: a first part is a detailed study of low level signals detected in the PAO surface detector, including an evaluation of the attached uncertainties, an improved base line correction, rejection of after-

pulses and a study of the early time asymmetry observed between the three phototubes of a same Cherenkov tank. Use is made of this latter feature in the second part to study the correlation between the early time asymmetry and the direction of the shower particles impinging on the tanks; such a correlation makes it possible to evaluate the average altitude from which the shower particles originate as a function of various parameters of physics relevance. The last part is a measurement of the rate of low energy muons stopping in the Cherenkov tanks and having their decay electrons detected. The results provide an interesting validation of the simulation codes used to model shower development in a regime where muon abundance is independent from primary mass. They also give evidence for a very low charge background, absent from such simulations and possibly associated with low energy neutrons. A beautiful buffet, prepared with the help of Nhung's friends and of Viviane and Nga, the wives of the two Pierre's, closed the event.



*Lion after graduation*

Nhung will spend next year in VATLY, pursuing analyses which she has initiated, in particular concerning shower divergences, and helping with the training of younger students. She would then probably take a one-year postdoc position abroad in 2011.

Diep came back from Orsay at the end of May. During his stay at Orsay he had worked with Marcel Urban and his team on the application of the jump method to the PAO surface detector data. There is now clear evidence for a mismatch between the data and predictions of shower

models concerning the muon abundance in shower events. Part of the effect might have been blamed on an underestimate of the energy scale measured in the Fluorescence Detector but Diep, after having returned to Hanoi, performed an energy independent analysis that excluded such an interpretation. It has been published as a GAP note. He is now, together with Hoai, working on a (sophisticated and hopefully realistic) toy Monte Carlo simulation of the shower development, aimed at understanding muon production better. While in Orsay, he gave a poster presentation of his work on the occasion of the 10<sup>th</sup> Orsay Interdisciplinary Colloquium and of the celebration of the International Year of Astronomy and won a prize for the quality of his presentation.

Diep, Lion and Hoai have brought to a final form a shower development code concerned with electromagnetic interactions exclusively (bremsstrahlung and pair creation), making up the main component – via neutral pion decays – of



*Hoai after graduation. Left to right: Tuan Anh, Diep, Hoai, Pierre, Nhung and Lion.*

UHECR showers. The code was used to study the Landau-Pomeranchuk-Migdal effect in such showers, which was found relatively unimportant. This gave the material for an article submitted for publication in Communications in Physics (Vietnam) and for the dissertation which Lion presented at the HUS and for which he got excellent marks (he then went to CERN as a summer student, together with Lan, and is now planning to study abroad, possibly in Orsay). Following a suggestion from Marcel Urban, the

code was also used by Diep and Hoai to study the effect, first described by Don Perkins in emulsions, of very high energy electron-positron pairs behaving as if they were neutral when the electron and positron stay very close together over a long distance. Here again, in practice, the effect was found to be small.

Hoai, already mentioned twice for her contributions to shower development studies, decided indeed to stay with us for a master after having brilliantly graduated from Hanoi University of Education (the subject of her dissertation was the capture of a binary member by a massive object resulting in the formation of an active X-ray binary; it had been commented upon in the preceding issue).



*Dong in Malargüe*

Dong is now back in Orsay at IPN where he works under the direction of Isabelle Lhenry on the monitoring of the stability of the response of the Surface Detector Cherenkov tanks. On this occasion, he went to the collaboration meeting in Malargüe where he could give a brief presentation of his work. He will return to Hanoi at the beginning of January 2010 to get married! While in Hanoi, he had completed an interesting and important study of the photomultiplier tubes used in the PAO Surface Detector. These include a 9" diameter spherical photocathode with a first dynode at the centre followed by a standard linear focusing dynode chain on the axis. The first dynode is of the so-called foil type, meaning that it is made of two adjacent circular perforated plates fed at different potentials, coated for secondary emission. The main result of Dong's

study, which had been previously overlooked, is that the electron flux behind the first dynode remembers where on the photocathode the primary photoelectron has been produced. As the PAO phototubes are not shielded from the Earth magnetic field, and as the linear focusing dynode chain is not azimuthally symmetric, the global response depends on the photon impact on the photocathode in a complex way that happens to be well described by a simple and sensible model. This work has been reported in a GAP note and will contribute a significant improvement to the detector simulation code used in the PAO collaboration.

Tuan Anh has been working hard on making our radio interferometer work properly (see preceding issue) and detect the Sun. Neither he nor Pierre, supposed to be his supervisor, had experience in radio astronomy. Pierre had worked with radio frequency cavities and had some familiarity with RF but had never worked with radio waves in the past. In practice it meant that student and teacher had to learn together more or less from scratch... a very good school indeed for both. Fortunately they got support from Thieu for standard electronics (the signal being shifted to 30 MHz by standard super heterodyne technique) and from the satellite team of the Vietnam Academy of Sciences, just across the street, who are equipped with measuring tools in the GHz range (the interferometer is tuned on 610 MHz). Each electronics unit has been carefully tested and calibrated, new supports have been constructed for a convenient positioning of the antennae, new electronics tools (an additional amplifier, a 30 MHz generator, an ADC and an amplitude-to-frequency converter) have been home made. In spite of all this, it turned out to be impossible to see the Sun from the roof of the laboratory which is surrounded by powerful mobile telephone antennae and other radiofrequency emitters (the Vietnamese CIA has its seat some hundred meters away from us...). It was then decided to bring the equipment near Hoa Binh, in the garden of a friend's villa, surrounded by hills and reasonably far from any emitter. A rewarding move indeed! We were immediately able to see the Sun and the nice interference pattern, exactly as expected. Three journeys to Hoa Binh (the first one was kind of lost because of very strong storms) were

enough to learn and optimize the detector which is now working well. On the occasion of a trip to Tam Dao (see below) a new possible location was spotted in a meteorology station, however not very far from emitting antennae: the possibility to use it will soon be explored.



*In Hoa Binh: Tuan Anh adjusting one of the interferometer antennae (the other can be seen in the background).*

As Tuan Anh will continue working with VATLY for his PhD after having presented his master thesis, the question naturally arises of the opportunity to extend the laboratory research in the direction of radio astronomy. With some effort, other sources than the Sun could be detected, such as the centre of the Milky Way and some supernova remnants. There is no doubt that it makes much more sense for Vietnam, where the sky is nearly always cloudy, to invest in radio astronomy rather than in telescopes operated in the visible. In a first phase (Tuan Anh's PhD) one might hope for an active collaboration and support from Meudon and Nançay Observatories with the help of Nguyen Quang Rieu who gave Vietnam the present interferometer. But other choices are also possible, such as working in a collaboration using detectors in space, for example in X-ray astronomy. Whatever will be decided, the option of opening VATLY to a new field beside cosmic rays sounds attractive.

Thao and Tuan Anh went to Osaka in February-March where they had been selected to attend a school on experimental nuclear physics. Huong, a young master student from HUS who had spent some time in VATLY, also attended. Thao acted as a tutor and joined two weeks in

advance in order to be trained. On this occasion she got experience in detecting electrons from muon decays, an experience which she then used to design a similar measurement in the VATLY PAO-like Cherenkov tank (she had equipped it with a trigger hodoscope, see last issue).



*Coming back from the excursion at Osaka school (Tuan Anh and Thao are both in the front row at the extreme left and right respectively)*

She wrote a Monte Carlo simulation of the experiment and worked out all numbers. She is now operating the system and calibrating the VEM value. Problems with leaky capacitors between anode and ground have occurred recurrently (the humidity in Hanoi is always very high) and better quality capacitors which Dong will bring back from Orsay will be installed as replacements.

The, who made her dissertation with us in 2008 and who had been teaching high school students since then, decided to make a master in VATLY and joined at the end of the Summer. She and Hoai are currently attending many lectures but will soon (after Têt) be more present in the lab. The started working on a Monte Carlo simulation of diffusive shock acceleration, with the aim of understanding the basic mechanism and the influence of the various parameters of relevance. Together with Hoai and Tuan Anh, she attended the 15th Vietnam School of Physics (VSOP) which took place in Dong Hoi in July. This was an opportunity for us to share a lunch with Patrick Aurenche who stopped in Hanoi on his way to Dong Hoi and met various officials in preparation for the signature of the LIA agreement (see earlier

issues). Tuan Anh and Hoai earned prizes for the presentation they gave of their work.



VSOP 15 in Dong Hoi. Left to right: Tuan Anh, Prof. Nomachi, Hoai and Huang.

actively for better Vietnamese universities by giving seminars, for example at the National



Pierre receiving the Lagarrigue prize from the hands of the Head of the French Physical Society



At the Van Mieu ceremony: Tuan Anh, Hoai, Odon Vallet and Thao.



After the Lagarrigue colloquium. Left to right: Pierre, J.P. Repellin, J. Iliopoulos, L. Di Lella and C. Froidevaux

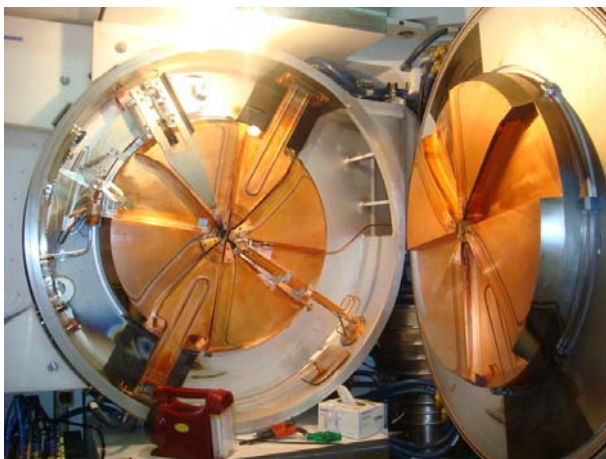
In September, Tuan Anh, Thao and Hoai were awarded an Odon Vallet fellowship on the occasion of a ceremony at Van Mieu.

Pierre was awarded the 2008 André Lagarrigue prize and spent the month of March at LAL-Orsay where he had been invited on this occasion. This was for him a moving opportunity to meet many old friends with whom he had been working in the past and to share with them memories of the good old times. Klaus Tittel and Marcel Banner covered the  $K^0$  physics and ISR periods, Luigi Di Lella and Daniel Froidevaux the proton-antiproton collider, Patrick Jannot the superconductivity work and Jim Cronin the Vietnamese participation in the Pierre Auger Observatory. Pierre also continued fighting

Institute for Science and Technology Policy and Strategic Studies (NISTPASS), by participating in round table discussions and by writing articles, in particular for Tia Sang, the journal of the Ministry of Sciences and Technology. In this context, he received an award "in recognition for his outstanding presentation to the Third Conference on Comparative Education in Vietnam". He gave astrophysics lectures to master students of the National University and will give the last lecture at the LHC School which will take place in Saigon in early January and which Hoai and Lion will attend. He has been accepted to join the International Astronomer Union, which, however, Vietnam is still sadly resisting, for no good reason

of course, to join as a country. In November, he took part in a three-day meeting held in Hanoi between a delegation of French academics and their Vietnamese partners in the future Hoa Lac University (see announcement on top of the present issue). If this project were to concretize, joining this University would be a natural move for VATLY. More will be said in future issues. Finally, Pierre went to Erice in August to report to the World Laboratory on the progress in VATLY. On this occasion, he attended the 42nd International Seminar on Planetary Emergencies together with Pham Duy Hien. Hien is a former director of the Da Lat reactor Institute and presently active as an advisor of the Vietnamese Ministers of Education and of Research (MET and MOST). He is a very good friend of VATLY and will usefully contribute to the work of the Erice Conferences.

The Institute has invested in some civil engineering work, including better parking lots, a nice tennis court which is being rented to players outside working hours, and, more importantly for us, a new VATLY meeting room. We now have four rooms in a row on the balcony of the third floor, well matched to our needs (the staff includes, in addition to Pierre, one postdoc, three PhD students, three master students and one undergraduate).



*The INST Cyclotron pole pieces before assembly*

A small sector focused cyclotron has been installed at the ground floor of the Institute, a real jewel. It accelerates  $H^-$ 's to 10 MeV and stripping foils are inserted on the outward orbit to eject the beam to irradiation stations where isotopes are

produced for medical use. At the same time a 30 MeV proton cyclotron was installed downtown in one of the major Hanoi hospitals. This surge of accelerator activity gave the Institute and VAEI the opportunity to organize a school to train engineers and scientists to accelerator technology. This was done in collaboration with, and with strong support from, the French CNRS/IN2P3 in the framework of the future LIA. Diep, who attended the school and helped with its organization, reports elsewhere in the present issue.



*VAEI Day: the dance (Thao and Hoai are the second and fifth dancers from the left respectively).*

The VAEI Day in October was the occasion of several festive events. Diep shone at the badminton championship and the Institute team arrived second in the rope pulling competition. The highlight was the participation of Hoai and Thao in a ballet of outstanding artistic standing. In the first part, dressed in dark long gowns, they were bending and bowing under the weight of the yoke of feudal oppression. Then came the August Revolution and, dressed in white luminous ballet skirts, they were jumping around in an ethereal and joyful dance. Bac Hô, Béjart and Nureyev would have been proud of them if they only could have seen that!

VATLY enjoyed the visit of several scientists such as Nomachi from Osaka, Vo Bich Hien from Arecibo, Roland Triay, a cosmologist from Marseilles and Philippe Lamy, also from Marseilles, who gave a seminar on solar corona observations with SOHO-LASCO. Pierre, Tuan Anh and Philippe Lamy went to Tam Dao to visit

a site where the University of Education is considering the installation of a small telescope, which Ukrainian scientists are willing to give Vietnam as a gift. Tam Dao is famous for its cool cloudy climate, highly appreciated by Hanoians who enjoy spending summer week-ends there. However, it is not the best place for a telescope, not to mention that you have to climb 1423 steps before reaching the top of the mountain... We also heard a very interesting seminar by Michael Werner from Caltech on the Spitzer Space Telescope.



*On top of Tam Dao: Pierre, P. Lamy and Tuan Anh*

The most recent visit was of David Roberts, a young theorist from Los Alamos working on Bose Einstein condensates, spending three months in Hanoi as an advisor to the US on matters of higher education in relation with support given by the States. We invited him for lunch and very much enjoyed exchanging views with him.

Before closing this section, we should mention that Nguyen Van Hiep, a fourth year student at HUS, will join us after Têt to make his dissertation. He will study the effect of cosmic rays on climate and will construct a cloud chamber.

## **AN ACCELERATOR SCHOOL IN THE INSTITUTE (P.N. Diep)**

An accelerator school was recently organized in Hanoi from 07/12/2009 to 17/12/2009. It was co-organized by the Vietnam Atomic Energy Institute (VAEI) and the French

National Centre of Scientific Research (CNRS) in the framework of a joint research project between France and Vietnam called LIA (Associated International Laboratory). The school attracted participants from all over the country and the lecturers were from both France and Vietnam. The participants were engineers, physicists, and medical physicists from companies, research institutes, universities and major hospitals in Vietnam.



*Lecturers and organizers at the accelerator school. Left to right: Quyet (lecturer), Luc Le Calvez (CNRS representative), Pierre, Tuan (Vice director of VAEI), Dung (organizer), Thanh (Head of VAEI training), Giap (Head of INST) and Thieu (Head of the local organizing committee).*

The use of accelerators for medical treatment and for producing cancer tracers has just been recently developed in Vietnam. Nowadays, there are 17 cobalt machines, 11 linacs and 3 cyclotrons used for medical purpose. Of these, the first linac was put into operation in the Vietnam National Cancer Institute in 2000. Most people working with accelerators or on related topics like repair, maintenance or Quality Assurance (QA) and Quality Control (QC) have not been trained in the field. They have moved from other fields and very few only have been trained abroad. Therefore, the need for providing basic knowledge in the field is getting stronger and stronger.

Lectures given at the school covered quite a broad spectrum. They included a general introduction to accelerators given by Pierre and Alex Muller (IPN Orsay and CNRS), interesting lectures on RF cavities given by Michel Caplot (THALES group) and Jean-Luc Biarrote (IPN

Orsay), lectures on beam dynamics by Bernard Launé (IPN Orsay and CNRS), on the physics of the Large Hadron Collider (LHC) at CERN by Florent Staley (Ministry of Higher Education and Research) and very impressive lectures given by Sabine Delacroix from the Institut Curie. Sabine talked about the work being done at the Centre for proton therapy where amazing precision is achieved, resulting in very successful results in cancer treatment. On the Vietnamese side, we heard very interesting lectures on vacuum technology from professor Do Van An from ITIMS (International Training Institute for Materials Science) of Hanoi University of Technology, a nice summary on the studies of unstable nuclei, lectures on the use of accelerators and QA and QC tasks in Vietnam by professors Le Hong Khiem (IOP), Pham Quoc Hung (HUS) and Nguyen Huu Quyet (INST) respectively. At the end of the school, we also had a chance to visit a 30 MeV cyclotron (the highest energy accelerator in the country) which has just recently been built in the largest national military hospital of Vietnam. They are currently, in a first phase, producing FDG (Fluorodeoxyglucose) for Positron Emission Tomography (PET) and Thallium and Gallium for Single Photon Emission Computed Tomography (SPECT) used, in particular, to detect cancer tumours. In the future, an extracted beam line will be set up for use in training nuclear physics students.

During the week-end, a one-day tour was organized to Ha Long Bay for the lecturers, which they very much enjoyed.

The participants were very pleased with the school. It was a rare chance for many of them working in this field to meet each other, to exchange experiences and to learn in some detail about their work. Unlike other schools in Vietnam, attended mostly by young students, this school gathered experienced participants having worked with, or in relation with, accelerators for many years. They actively participated to the school, asking questions, exchanging ideas, giving comments and so on.

As a participant in the school, I really enjoyed it and learned a lot of useful things. The organizers, under Alex's and Thieu's direction, had done an excellent job. It is a good start for the

future scientific cooperation between Vietnam and France in the LIA framework.

### ***FROM MARS TO HANOI: AN INTERESTING TRAJECTORY***

Recently, a young and brilliant Vietnamese postdoc, Tran The Trung, trained in modern astrophysics, returned back home. As he was at the time the only Vietnamese in Vietnam having a PhD in astrophysics, we, in VATLY, were hoping that he could play a role in starting research activities in the country and took contact with him. However, the Vietnamese scientific community was unfortunately not yet prepared to take such a step and, to our disarray, he took a job in a private university as a lecturer in mathematics.

As we know that he is, as we are, eager to see the level of higher Vietnamese education improve, we felt that it would interest the readers of VATLY's Newsletter to learn more about his young career. His approach to an active improvement of the Vietnamese academic situation has been different from ours but may well turn out to be more efficient, who knows?

Diep has been interviewing him and the lines below summarize what he has learned.

#### *Early training*

Trung was born in 1978 and, at the age of 18, after having followed high school in Hanoi, won a gold medal at the International Physics Olympics in Oslo. He then went to Melbourne where he studied mathematics and physics and obtained a Bachelor degree in year 2000. He spent the next two years in Paris 6-Jussieu, in a team working on planetary atmospheres, from which he got his Master degree in 2002. He made his PhD research in association with that team, at Versailles University, and obtained his degree in 2005. The subject of his work was the development and testing of an optical depth sensor for the measurement of dust and clouds in the atmosphere of Mars. After graduation, he was employed for a few months by the French CNRS and worked in the Laboratory for Meteorological Dynamics on the simulation of the interaction between light and dust and clouds in the Mars atmosphere.



*Back in Hanoi*

After a brief association with the Institute of Physics, Trung joined FPT University in February 2007 as a lecturer in mathematics. He became Director of the Math Department at the end of 2007 and kept this position during the whole of 2008. Since January 2009 he took the functions of Academic Director. At FPT, he has been lecturing for 700 students in calculus, algebra and discrete mathematics and, recently, has been organizing academic activities for 2,500 students in software engineering and business administration. Moreover, Trung is now in charge of the recently established FPT Technology Research Institute.



*T.T. Trung (second from left) contributes actively to the Vietnamese version of Wikipedia. He's seen here with other major Vietnamese contributors.*

*FPT and FPT University as they see themselves*

FPT Corporation is a short form of The Financing and Promoting Technology Corporation, which was founded in 1988. It is considered the most advanced Corporation in the area of Information Technology and Communication in Vietnam. FPT Corporation consists of 83 subsidiaries and affiliated units operating in all fields of IT and Communication with nearly 10,000 staff and experts nationwide. With its continuous growth, FPT has also opened 6 more companies which are on-site located at the corporation's major markets: Japan, America, France, Australia, Singapore and Malaysia. In 2008, despite the severe financial crisis, the whole corporation's sales dramatically increased by more

than \$1 billion. In the next three years, the number of FPT employees is expected to nearly double and the sales to exceed \$2 billion. At the moment, FPT is partner of more than 200 of the major corporations in the field of IT worldwide.

In 2006, the Vietnamese Government officially granted permission to establish FPT University. Its mission is to be the leader in building a University of a new generation, with a modern philosophy of education that associates the training program with reality. More than that, FPTU has the responsibility of helping Vietnamese IT industry to reach the level of advanced countries in the world. At the moment, the immediate objective of FPTU is to train and provide high quality human resources specialized in IT and other industry related fields to FPT Corporation as well as IT Corporation worldwide and IT enterprises in Vietnam.

An essential difference between FPTU and other universities in Vietnam is its close relation with industry. Programs used for education are updated and comply with international standard and technologies, with focus on language skills. Furthermore, with the training enhancement in the organizational process of production as well as teamwork skills and personal skills, students are ensured with the best qualifications to have good jobs in FPT Corporation and other leading enterprises.

FPT University has already completed facilities in Hanoi, as well as a training institute in Saigon to train thousands of students. The University is planning the construction of a modern university campus on over 30 hectares in Hoa Lac and aims at having training institutes in major cities throughout the country within 3-5 years.

*Research at the FPT Technology Research Institute*

When asked about future perspectives, in particular concerning research, Trung remarked that applied research gets naturally support from industry while fundamental research does not. He stated his belief, however, that in a developing country like Vietnam, fundamental research may hope for some support from the larger industrial corporations. This is indeed the case with FPT that has just established the FPT Technology Research

Institute of which Trung is in charge. Some room has been made in this Institute for space technology and Trung sees there a possibility, in the future, to include fundamental astrophysics research in its research activities although the primary role of the Institute is to bring together expertise in the most advanced technologies of relevance.

When asked about his hopes to contribute to the improvement of the level of higher education and research in Vietnam, Trung answered that his immediate ambition was to

bridge the gap between science and society (or more simply between science and the Vietnamese market). He said: “Someone like me can contribute to the raising of the level of higher education in Vietnam by establishing a link between the teaching tasks of the University and the research tasks of the Institute as I am presently doing at FPT. I am not claiming that this is the only hope to obtain some positive result; I am not even claiming that it will be successful; but it sounds to me as a practical and realistic approach in the present Vietnamese context.”

***Distribution:*** Patrick Aurenche, Jim Beatty, Jean Pierre Bibring, Pierre Billoir, Murat Boratav, Bui Duy Cam, Ludwik Celnikier, Georges Charpak, Nguyen Duc Chien, Doan Minh Chung, Bach Thanh Cong, Alain Cordier, Jim W. Cronin, Manoel Dialinas, François Le Diberder, Luigi Di Lella, John Ellis, Alberto Etchegoyen, Jerome Friedmann, Daniel Froidevaux, Yoshitaka Fujita, Karel Gaemers, Michèle Gerbaldi, Nguyễn Văn Giai, Edward Guinan, Jacques Haïssinski, John Hearnshaw, Pham Duy Hien, Nguyen Van Hieu, Morihiro Honda, Le Van Hong, Pham Quoc Hung, Nguyen Dai Hung, Antonio Insolia, Stavros Katsanevas, Dao Tien Khoa, Marc Lachièze-Rey, Nguyen Quynh Lan, Nguyen Van Lien, Grant Mathews, Giorgio Matthiae, Peter Mazur, Etienne Parizot, Michel Pedoussaut, Denis Perret-Gallix, Minh Ha Pham-Delègue, Tran Viet Phuong, Joël Pouthas, Philippe Quentin, Burton Richter, Nguyen Quang Rieu, Jean-Michel Rieubland, Jonathan L. Rosner, Carlo Rubbia, Shin'ya Sawada, Greg Snow, Paul Sommers, Michel Spiro, Jack Steinberger, Marilena Streit-Bianchi, Tiina Suomijarvi, Christine Sutton, Annick Suzor-Weiner, Tran Minh Tam, Dick Taylor, Samuel C.C. Ting, Hiroshi Tsunemi, Hoang Tuy, Marcel Urban, Odon Vallet, Jean Tran Thanh Van, Suzy Vascotto, Sylvie Vauclair, Tini Veltman, Alan Watson, Achim W. Weidemann, Joël Weisberg, Atsushi Yoshida, Antonino Zichichi.

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*Issues 1 to 12 of VATLY's Newsletter are available from our web site where you can also find general information concerning VATLY such as membership, list of publications, etc...*

<http://www.inst.gov.vn/Vatly/Vatly.htm>

– PHOTO ALBUM –



*At dinner after the Lagarrigue Prize: Nga (Pierre's wife), Jim Cronin and Pierre.*



*At Pierre Billoir's place in March. Left to right: Nhung, Nga, Pierre, Viviane (his wife), Pierre D., Ariane and Rémi (Pierre's daughter and son).*



*At dinner after Lagarrigue Prize. Left to right: Jacques Hässinski, Nga, Jacques Lefrançois and his wife.*



*At dinner after Lagarrigue Prize. Left to right: Diep, Marcel and Nhung.*



*Dong having dinner at Tiina Suomijarvi's place*



*At Alain Cordier's place in March. Left to right: Alain's wife, Pierre, Françoise (Marcel Urban's wife), Marcel, Nga and Alain.*



At Van Mieu after the Odon Vallet ceremony. Left to right: Hoai, Jean Tran Thanh Van, Thao and Tuan Anh.



After Hoai's graduation. Left to right: Tuan Anh, Lion, Thuy, Hoai, Pierre, Quynh Lan, a Hoai's friend, Nhung, Diep and Dong.



At Osaka school in front of the laboratory map: Tadamumi Kishimoto and Tuan Anh.



Thao enjoying Osaka school



Pierre giving a seminar at NISTPASS



Nhung's thesis jury. Left to right: The two Pierres, Marcel, Tran Minh Tam, Nguyen Mau Chung and Hervé de Kerret.



*VAEI Day. Diep, Hoai and Nhung surrounded by friends.*



*Dancers together with the Minister of Sciences and Technology. Thao is second from left.*



*VAEI Day. Pierre pulling the rope.*



*VAEI Day: the winners. Pierre is on the stage for the rope pulling competition...*



*Diep and his son Khoi at Van Mieu. Khoi is sitting on the head of a tortoise that carries the stele in the background where the names of the new doctors used to be engraved after each mandarinal competition.*



*Khoi (Diep's son) is now two years and two months old.*



*Hoai and Lion after Hoai's graduation.*



*Tuan Anh and Pierre leisurely taking data in Hoa Binh.*



*Participants at Osaka School. Thao and Huong are first and fifth from left in the front row respectively.*