

RECRUITMENT

For advertising enquiries, contact *CERN Courier* recruitment/classified, IOP Publishing, Temple Circus, Temple Way, Bristol BS1 6HG, UK. Tel +44 (0)117 930 1264 E-mail sales@cerncourier.com.
Please contact us for information about rates, colour options, publication dates and deadlines.

Opportunities in experimental and theoretical physics at CERN

CERN, the largest particle physics laboratory in the world, is opening several positions in experimental and theoretical physics to join this important reference centre for the European physics community in a stimulating scientific atmosphere.

Find out more on careers.cern/physics

Working in a place like nowhere else on earth.
CERN. Take part.

home.cern



HR
Human Resources



INSTITUTO DE FÍSICA
FACULTAD DE FÍSICA

Pontificia Universidad Católica de Chile

Tenure-track faculty positions at the Assistant Professor level

\$Attractive | South America | To start as early as August 2019

The Institute of Physics of the Pontificia Universidad Católica de Chile invites applications for tenure-track faculty positions at the Assistant Professor level, to start as early as August 2019. A Ph.D. degree in Physics (or closely related areas) is required and postdoctoral experience is highly desirable. The open positions are in the following areas:

- i) High Energy Physics: we are looking for an experimental particle physicist who will be able to take a leading role in our ongoing activities in the ATLAS experiment. Applicants who could also help maintain our current effort in neutrino physics with the JUNO experiment are particularly encouraged to apply.
- ii) Mathematical Physics: we are looking for candidates having the potential of interaction with the established research areas in Mathematical Physics at the institute such as Analysis, PDE, Quantum Physics, and Non-linear Physics.
- iii) Medical Physics: we are looking for candidates with a strong background and research expertise in the field.
- iv) Quantum Optics & Photonics: we are looking for strong candidates with theoretical or experimental research expertise in either of the following fields: photonics, nano-photonics, non-linear optics, optical metrology, novel laser technologies and similar topics.
- v) Plasma Physics: we are looking for candidates having a proven background or research expertise in experimental plasma physics in any of the following areas: Pulsed power Zpinch plasmas, high energy density physics, radiofrequency discharges, laser-produced plasmas, atmospheric and other non-Maxwellian plasmas or plasma diagnostics. Candidates performing theoretical and/or computer modeling research related to some of the previously mentioned experiments are also welcome.

The successful candidates are expected to establish a leading research program as well as to teach in Spanish at the undergraduate and graduate levels.

Applications must include two recommendation letters, curriculum vitae, list of publications, and statements of past and proposed research and teaching interests. The two recommendation letters must be sent separately to the application's e-mail address. All the documents should be sent by email before April 30, 2019 to the Head of the Search Committee at concurso2019@fis.puc.cl.

Accelerators | Photon Science | Particle Physics

Deutsches Elektronen-Synchrotron
A Research Centre of the Helmholtz Association

For our location in Hamburg we are seeking: DESY-Fellowships – experimental particle physics

DESY

DESY is one of the world's leading research centres for photon science, particle and astroparticle physics as well as accelerator physics. More than 2400 employees work at our two locations Hamburg and Zeuthen in science, technology and administration.

Particle physics and the investigation of the fundamental building blocks of nature and their interactions are at the core of the DESY mission. The lab is among the globally leading research institutions in this field. We take significant responsibility in internationally leading projects, e.g. at CERN and at KEK, and on our campus. We develop detectors and technologies relevant for our experimental activities, and we engage in scientific computing and in the development of future accelerators for particle physics.

The position

You are invited to take an active role in one or more of the following areas at Hamburg.

- Our involvements at CERN (ATLAS, CMS) and at KEK (Belle II)
- On-site experimental activities (ALPS II) and preparations for IAXO, MADMAX, LUXE
- Detector and technology development for future applications in particle physics
- Scientific computing
- Accelerator development

Requirements

- Ph.D. in physics completed within the last four years
- Interest in particle physics
- Expertise relevant for at least one of the areas listed above

DESY-Fellowships are awarded for a duration of 2 years with the possibility of prolongation by one additional year.

Further informations and a link to the submission system for your application and the references can be found here: www.desy.de/FellowFH

Please note that it is the applicants responsibility that all material, including letter of references, reach DESY before the deadline for the application to be considered.

Salary and benefits are commensurate with those of public service organisations in Germany. Classification is based upon qualifications and assigned duties. Handicapped persons will be given preference to other equally qualified applicants. DESY operates flexible work schemes. DESY is an equal opportunity, affirmative action employer and encourages applications from women. Vacant positions at DESY are in general open to part-time- work. During each application procedure DESY will assess whether the post can be filled with part-time employees.

We are looking forward to your application via our application system: www.desy.de/onlineapplication

Deutsches Elektronen-Synchrotron DESY
Human Resources Department I Code: FHFE001/2019
Notkestraße 85 | 22607 Hamburg | 22607 Hamburg Germany
Phone: +49 40 8998-3392
<http://www.desy.de/career>

Deadline for applications: 2019/03/31

PAUL SCHERRER INSTITUT



Head of the Division of Large Research Facilities

at the Paul Scherrer Institute (PSI)

and

Professor of Particle Accelerator Physics

at the Ecole Polytechnique Fédérale de Lausanne (EPFL)

PSI is a large center for multi-disciplinary research and one of the world's leading user laboratories. It develops and operates large accelerator-driven research infrastructures requiring exceptionally high standards of know-how and experience. With its 2100 employees it is an autonomous institution of the Swiss ETH domain.

EPFL is a leading university with strong emphasis on basic, engineering and life sciences. Research and teaching within its School of Basic Sciences includes high-energy physics, particle accelerator physics and plasma physics.

Together, we are seeking to appoint a dynamic person with strategic thinking, jointly as Head of the Division for Large Research Facilities at PSI and as tenured Professor of Particle Accelerator Physics at EPFL. This is a full-time position.

The Challenge

As Head of the Division for Large Research Facilities you will provide vision and leadership in technical, scientific and management aspects of all accelerator-based facilities at PSI, such as the SINQ neutron source, the Swiss Light Source (SLS), the SpS muon source, and the X-ray free electron laser SwissFEL. This division ensures the operation and future development of these facilities, which serve a large user community and Switzerland's sole Center for Proton Therapy.

As Professor of Particle Accelerator Physics, you will lead the EPFL participation in the Swiss Accelerator Research and Technology (CHART) collaboration between major Swiss institutions and CERN, develop your own CHART-related research activity at EPFL, direct PhD students in their research, and promote collaboration in your field with other laboratories and centers at EPFL. You will also provide teaching in the field of particle accelerator science at Master and graduate levels.

With its Large Hadron Collider, CERN is the world-leading research laboratory providing accelerator infrastructure at the energy frontier. CHART has ambitious R&D plans for the technical design of CERN's Future Circular Collider (FCC) in the next five years (2019–2023), which will further foster synergies between CERN, EPFL and PSI towards a strategically important and vigorous R&D program in accelerator science and technology. CHART is hosted by PSI.

For this position we are seeking a scientist of international standing, with proven records of scientific and technological achievements in the field of particle accelerators. Leadership capabilities as well as a strong interest for teaching and education are essential requirements.

Applications including a motivation letter, a curriculum vitae with a list of research outputs, a statement of research (max. 3 pages) and teaching interests (max. 1 page), as well as the contact information of at least five references, should be submitted in PDF format, by **31 March 2019** via

<https://facultyrecruiting.epfl.ch/position/17104896>

Enquiries may be addressed to:

Dr. Thierry Strässle, Director PSI a.i., Chair of the Search Committee
e-mail: thierry.straessle@psi.ch

Or to:

Prof. Harald Brune, Director of the Institute of Physics
e-mail: iphysdirector@epfl.ch

Additional information is available at www.psi.ch, www.epfl.ch, sb.epfl.ch, iphys.epfl.ch

EPFL and PSI are equal opportunity employers, they are committed to increasing the diversity of their members. Women are strongly encouraged to apply.



Tenure-track Assistant Professor Level Faculty Position in Experimental Medium or High Energy Nuclear Physics Department of Physics and Astronomy University of California, Riverside

The Department of Physics and Astronomy at the University of California, Riverside (<https://www.physics.ucr.edu/>) invites highly qualified individuals to apply for an Academic-year tenure-track faculty position in the field of experimental medium or high energy nuclear physics. The appointment will be made at the assistant professor level.

Candidates should possess a record of demonstrated excellence in research. The successful candidate is expected to establish an outstanding and well-funded research program involving graduate students and postdoctoral scientists, and to contribute to departmental teaching at all levels. Under an agreement between UCR and the Thomas Jefferson National Accelerator Facility (JLab), this position will be partially funded by JLab for the first four years. As such, a significant portion of the research program is expected to include work at JLab. The candidate is expected to complement our existing program in medium energy spin physics and high energy nuclear physics and play a significant role in preparations for a future Electron-Ion Collider being planned in the US.

Candidates for this position are required to have a Ph.D. or equivalent degree in physics or a related field. Salary will be competitive and commensurate with qualifications. Applicants should submit a cover letter, curriculum vitae, list of publications, a statement of research and teaching objectives, a statement addressing the candidate's past and potential future contributions to promote academic diversity and arrange to have at least four referees submit their letter of recommendation directly via the AP Recruit site at <https://apptrkr.com/1400215>.

For inquiries regarding the position, please contact the search committee Chair, **Prof. Richard Seto** (richard.seto@ucr.edu), or **Kenneth Barish** (kenneth.barish@ucr.edu). For inquiries regarding the application process, please contact Andrew Herrera, Academic Personnel, at andrew.herrera@ucr.edu.

Review of applications will commence on April 15, 2019, and proceed until the position is filled. For full consideration, applicants should submit their complete applications by the above date. Advancement through the faculty ranks at the University of California is through a series of structured, merit-based evaluations, occurring every 2-3 years, each of which includes substantial peer input. Minorities and members of underrepresented groups are particularly encouraged to apply.

The University of California is an Equal Opportunity/Affirmative Action Employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability, protected veteran status, or any other characteristic protected by law.

UCR is a world-class research university with an exceptionally diverse undergraduate student body. Its mission is explicitly linked to providing routes to educational success for underrepresented and first-generation college students. A commitment to this mission is a preferred qualification.



Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

CLUSTER OF EXCELLENCE
QUANTUM UNIVERSE



Quantum Universe is a newly established Cluster of Excellence as part of Germany's Excellence Strategy. It brings together leading scientists from mathematics, particle physics, astrophysics, and cosmology at Universität Hamburg and DESY to understand mass and gravity at the interface between quantum physics and cosmology.

We invite applications for

MORE THAN 30 PHD AND POSTDOC POSITIONS

on research topics of the Cluster of Excellence:

Higgs Physics • Dark Matter • Gravitational Waves • Quantum Theories and Mathematical Physics

Quantum Universe is looking for outstanding doctoral and postdoctoral researchers with excellent degrees and scientific track record. Successful candidates will join an inspiring world-class environment for research and education and will be promoted through the Quantum Universe Research School.

For detailed information on the available positions and the application process please visit www.qu.uni-hamburg.de/jobs.html or contact **Dr. Michael Greife** or **Christian Kühn**: office@qu.uni-hamburg.de.



Universität Hamburg has been certified.
audit familiengerechte hochschule



cadinox®



“WELDED SOLUTIONS FOR COMPLEX AND
UNIQUE INSTALLATIONS”

www.cadinox.com

10TH INTERNATIONAL PARTICLE ACCELERATOR CONFERENCE

19 - 24 MAY 2019

Hosted by ANSTO's Australian Synchrotron at the
Melbourne Convention & Exhibition Centre



www.ipac19.org

Artwork: “In Unity” by Kelly Saylor.



Australian Government



ANSTO
Science. Ingenuity. Sustainability.

PEOPLE OBITUARIES

YONG HO CHIN 1958–2019

A foremost accelerator physicist

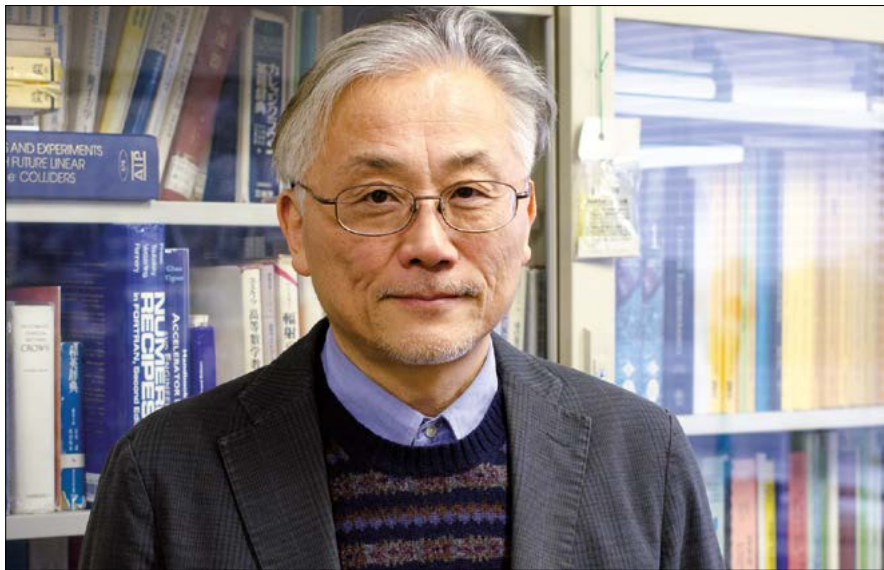
Yong Ho Chin, a leading theoretical accelerator physicist at the High Energy Accelerator Research Organization (KEK) in Japan and chair of the beam dynamics panel of the International Committee for Future Accelerators (ICFA) since November 2016, unexpectedly passed away on 8 January.

In 1984, Yong Ho received his PhD in accelerator physics from the University of Tokyo for studies performed at KEK under the supervision of Masatoshi Koshiba, who won the Nobel Prize in Physics jointly with Raymond Davis Jr and Riccardo Giacconi in 2002. Yong Ho participated in the design and commissioning of the TRISTAN accelerator, and later in the designs of the KEKB and J-PARC accelerators, along with major contributions to JLC (the Japan Linear Collider) and ILC (the International Linear Collider). In the 1980s and 1990s he spent several years abroad, at DESY and CERN in Europe, and at LBL (now LBNL) in the US.

Distinguished career

In his long and distinguished career, Yong Ho made numerous essential contributions in the fields of beam-coupling impedances, coherent beam instabilities, radio-frequency klystron development, space-charge and beam-beam collective effects. He considered his “renormalisation theory for the beam-beam interaction”, developed during his last six months at DESY in the 1980s, as his greatest achievement. However, in the accelerator community, Yong Ho Chin’s name is linked, in particular, to two computer codes he wrote and maintained, and which have been widely used over the past decades.

The first of these codes, developed by Yong Ho in the 1980s, is MOSES (MOde-coupling Single bunch instabilities in an Electron Storage ring), which computes the complex transverse coherent betatron tune



Yong Ho Chin was chair of the beam dynamics panel of the International Committee for Future Accelerators.

shifts as a function of the beam current for a bunch interacting with a resonator impedance. The second well-known code, written by Yong Ho in the 1990s, is the ABCI (Azimuthal Beam Cavity Interaction) code for impedance and wakefield calculations. This served as a time-domain solver of electromagnetic fields when a bunched beam with arbitrary charge distribution goes through an axisymmetric structure, on or off axis.

In the mid-1990s, Yong Ho’s work expanded to two-stream beam instabilities. He rightly foresaw that such instabilities could potentially limit the performance of KEKB and organised and co-organised several international workshops to address this issue early on. Subsequently, he was put in charge of the development and modelling of the X-band klystron for the JLC. He also greatly contributed to the development of the multi-beam klystron now in use for large superconducting lin-

acs, and to the optimisation of the J-PARC accelerators.

Yong Ho returned to the field of collective effects more than 10 years ago and he remained extremely active there. Over the past few years, together with two other renowned accelerator physicists, Alexander W Chao and Michael Blaskiewicz, he developed a two-particle model to study the effects of space-charge force on transverse coherent beam instabilities. The purpose of this model was to obtain a simple picture of some of the essence of the physics of this intricate subject and at the same time provide a good starting point for newcomers joining the effort to solve this long-lasting issue.

As illustrated by his role as chair of an ICFA panel, and by his co-organisation of a large number of international workshops and conferences (including PAC and LINAC), Yong Ho was devoted to serving the international physics community.

He was a productive author, diligent referee and esteemed editor for several journals. In 2015 he was recognised with an Outstanding Referee Award by the American Physical Society, and just a few months ago, in the summer of 2018, Yong Ho was appointed associate editor of *Physical Review Accelerators and Beams*.

Yong Ho was a very good lecturer, teaching at different accelerator schools, including the CERN Accelerator School. He was also in charge of a collaboration programme in which young accelerator scientists were invited to spend a few weeks at KEK.

Yong Ho was a wonderful person and an outstanding scientist. We are very proud to have had the chance to work and collaborate with him. His passing away is a great loss to the community and he will be sorely missed.

His friends and colleagues
at CERN.

PEOPLE OBITUARIES

ALBERT HOFMANN 1933–2018

An expert in all things colliders

Albert Hofmann, a brilliant accelerator physicist with a worldwide reputation and a distinguished career in the US and Europe, passed away on 28 December 2018.

Hofmann finished his studies at ETH Zurich in the mid-1960s and went on to work at the Cambridge Electron Accelerator (CEA) at Harvard University. The team at CEA was a highly reputed one, making seminal contributions including the invention of the low-beta scheme, which converted the CEA 6 GeV electron synchrotron into an electron-positron collider where the first indications of the charm quark were revealed. This scheme, used in the accelerator's by-pass, became a basic ingredient of modern colliders.

A major element of this conversion was a Robinson damping wiggler – a series of magnets that suppresses a beam instability brought about by synchrotron radiation. Hofmann led the design, installation and commissioning of this complex device. This was the first multipole wiggler to be used in an electron synchrotron ring, and led to Hofmann's subsequent lifelong interest in the new discipline of synchrotron radiation and his monumental book *The Physics of Synchrotron Radiation*.

When the CEA closed Hofmann moved to CERN in 1973, where he made significant contributions to the performance of the Intersecting Storage Rings (ISR) collider, including proposing the use of a higher harmonic cavity to control beam stability as had been done at CEA.



Albert Hofmann made significant contributions to the performance of colliders in the US and Europe.

Hofmann also served as advisor for a number of synchrotron-radiation facilities

When the ISR was closed a decade later, Hofmann returned to the US, accepting a professorship at Stanford University. He worked on the damping rings for the SLC elec-

tron-positron linear collider and on synchrotron-radiation devices such as the wiggler and undulator magnets to be inserted into the PEP and SPEAR electron-positron circular colliders.

Hofmann was then invited to return to CERN to take joint responsibility for the commissioning of the large electron-positron collider (LEP), and made remarkable contributions to its performance throughout the collider's 11 years of operations. As at the ISR, he was especially fond of subtle effects such as those of tidal forces on the collider's beam energy, which was crucial for the precision of the

experimental programme.

He subsequently returned to California to work on a compact light source based on inverse Compton scattering that was under development by Lyncean Technologies Inc in Palo Alto. Here, he brought his deep knowledge of accelerator physics to bear on the unusual situation of a very-low-energy electron storage ring. This knowledge was key to the success of this light source.

Hofmann gave many inspiring lectures at the CERN Accelerator School, simplifying, as only he could, some of the most difficult concepts in accelerator physics. He also served as advisor for a number of synchrotron-radiation facilities, spanning from the European Synchrotron Radiation Facility (ESRF) in Grenoble to the Synchrotron Radiation Research Centre (SRRC) in Taiwan. In 1996 he was awarded the prestigious Robert R. Wilson Prize of the American Physical Society for his achievements in accelerator physics and teaching.

Albert Hofmann was always over-generous in giving scientific credit to colleagues who had in some cases only made a minor contribution. He also had an impish, tongue-in-cheek sense of humour and told fascinating stories about the early days of colliders. We say goodbye to this generous, modest, inspiring and unpretentious role model.

His friends and colleagues
at CERN and SLAC.

VLADIMIR RITTENBERG 1934–2018

Striving for essentials

Vladimir Rittenberg, a distinguished theoretical physicist, passed away on 15 April 2018. Vladimir was born in 1934 in Bucharest, Romania, to a mother from Galati, eastern Romania, and a father, an engineer, from Bessarabia, now Moldavia. He attended the French School in Bucharest, after which he earned

a diploma in technology from the Bucharest Electrotechnical School. Starting in 1952, Vladimir studied theoretical physics at the University of Bucharest, passing the MSc exam in 1957. Due to political upheaval, Vladimir was forced to leave the university in 1958 and accept a job in a laboratory for crystal growth. It was only in 1963 that he was able to

return to theoretical physics, joining the high-energy physics group of the Romanian Academy. In 1966 he received a PhD and became the leader of the group.

In 1969 Vladimir finally left Romania. This was facilitated through an invitation to Oxford University arranged by Bruno Renner. In the same year he immigrated

to Israel, where he was a visiting scientist at the Weizmann Institute until 1972. Thereafter, for three years, he worked at the Rockefeller University in New York. In 1975 Vladimir was appointed professor at the University of Bonn in Germany. He kept this position for more than 40 years, but also followed many invitations to spend time abroad: ▷

PEOPLE OBITUARIES

for example, once more at Rockefeller University, several times at the International School for Advanced Studies (SISSA) in Trieste, at the University of Melbourne, the Dubna Laboratories and various places in France. In his later years he also visited the Federal University of São Carlos in Brazil many times.

Vladimir's early papers – 19 in total between 1966 and 1969, mostly with Ladislaus Banyai as co-author – were devoted to particle theory and the related group theory. In the following five years Vladimir collaborated with various colleagues from the Weizmann Institute and Rockefeller University, producing 25 papers on phenomenological high-energy physics. On his arrival in Bonn, his main interest turned to the mathematics of representations of superalgebras related to supersymmetrical quantum field theories. With Werner Nahm and Manfred Scheunert, and later with Daniel Wyler, he published several papers that were seminal to the subject and relevant for string theory.

At the beginning of the 1980s Vladimir successfully conquered



Vladimir Rittenberg's impact spanned mathematical, statistical and high-energy physics.

the new domain of spin field models, in particular those related to the then newly revived two-dimensional conformal field theories. In this area of mathematical physics he produced more than 50 articles, partially in collaboration with his students or colleagues in Bonn, or visitors to the Bonn physics depart-

ment. He obtained several first results about the level structure of quantum spin chains using conformal invariance, which were useful in the early stages of string theory.

From 1993 Vladimir turned his attention to non-equilibrium statistical processes such as reaction-diffusion phenomena. He showed

how in one dimension, similar to equilibrium processes, some of these non-equilibrium processes can be described through quantum spin chain models too, partly exploiting quadratic algebras. This resulted in 25 articles written with various collaborators, in particular Francisco Alcaraz. With Francisco he constructed the first stochastic model that is integrable and conformally invariant. Vladimir was also the founding editor of the *Journal of Statistical Mechanics*, which launched in 2004.

Vladimir was very passionate in scientific discussions, always striving to get a better understanding of the underlying physics. He had an extraordinary gift of connecting with people, which was clearly visible through the huge number of researchers who were his co-authors. He also inspired young people to enthusiastically follow his guide into the adventure of scientific research.

Vladimir is survived by his daughter Vivian and three grandchildren.

Rainald Flume and Günter v Gehlen the University of Bonn.

Pio Picchi 1942–2019

A leader in detector development

Pio Picchi, a prominent Italian particle physicist, suddenly passed away on 23 January. It was a shock for everyone who knew him as a mentor and as a splendid friend.

We had the great honour and pleasure of collaborating with Pio over the past few decades. He had an honest and unbiased scientific approach to experimental particle physics, often along the lines of his exceptional intuition, and had many insightful ideas at the frontiers of detector technologies.

Pio spent most of his life as a physicist, first at the INFN Frascati National Laboratories in Italy, and then at the University of Turin, where he was appointed full professor at the age of 34. In his research, mostly conducted at CERN, he gave visible contributions to the design and construction of several experiments such as FRAMM and ALEPH at CERN, NUSEX in the Mont Blanc underground laboratory, and LVD and ICARUS at the INFN Gran Sasso



Pio Picchi was appointed full professor at the age of 34.

National Laboratory.

To mention a few of his achievements, it was under Pio's leadership that the first tonne-scale liquid-argon time-projection chamber

Picchi had the gift of always recognising and valuing the best skills

detector was successfully operated at CERN within the ICARUS R&D programme; he pioneered, also at CERN, the double-phase operation mode of xenon and argon time-projection chambers, which nowadays is widely used in dark-matter experiments; and he actively participated in R&D on new micropattern detectors.

Since a relatively young age, Pio was affected by Parkinson's disease. Thanks to his courage and tenacity against his evolving illness, he continued to work at his best. CERN

was a place of joy for him. On days with physicians' visits, he would be upset because that prevented him from going to work. For us, his presence provided an anchor to hear the latest news and to discuss not only physics but also life. Even on his very last day at CERN, Pio was discussing with students new ideas on single-photon detection in liquid argon and the way to test them. He had the gift of always recognising and valuing the best skills of every person around him: students, technical personnel, colleagues and friends. And he always did so without asking for anything in return.

We will remember Pio as a generous man with a strong sense of friendship. Those who needed help found a friend that was always available and discreet: if he could help, he would do it with modesty and confidentiality.

His friends and colleagues at CERN and beyond.