

Tribute to Valentine Telegdi



who passed away on April 8th in Pasadena

by K. Freudenreich, ETHZ/IPP/LHP

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Born on January 11th, 1922 in Budapest, spent only a few years in Hungary.

According to his own words in his younger years he was a master of “involuntary tourism”, participating passively in German occupations in three countries: Austria, Belgium and Northern Italy.

He attended grammar school in Vienna and then a technical school in Brussels.

From 1940 - 1943 he worked in a patent attorney's office in Milan.

He used to say that - contrary to Albert Einstein in Berne - being on the other side of the fence he really had to work hard.

When the Germans occupied Northern Italy Val, together with his mother, fled to Switzerland.

Val Telegdi: years 1943 - 1946

After a short internment in a refugee camp he joined his father in Lausanne where he studied chemical engineering at the EPUL with a grant from the *Fonds Européen de Secours aux Etudiants*. At the EPUL he also attended lectures in theoretical physics given by E.C.G. Stückelberg von Breidenbach whom he estimated very highly.

Ironical telegram by Gell-Mann to “congratulate” Feynman for his Nobel prize:
“Now you can give back my notes”, signed Stückelberg

Stückelberg helped Val to be accepted by P. Scherrer at ETHZ.

In 1946 the institute of physics was located at the Gloriastrasse.

He got half the salary of an assistant (260,- SF/month, the rent for his furnished room being 40,- SF/month)

His thesis advisers were P. Scherrer and W. Pauli as second reviewer.

Pauli was feared because of his critical remarks on everybody, except on his teacher A. Sommerfeld.

Also Scherrer had links to Sommerfeld, studies in Königsberg, P. Debye.

Val had started to read Sommerfeld's book on atomic structure and

spectral lines at the age of 15 \implies his interest in Sommerfeld.

Another important person for Val in Zürich was Mario Verde, a theoretician.

He was his friend, mentor, example and best man to his marriage with Lia, born Leonardi.

Lia was very important to Val in many aspects:

One aspect - fortunately, I had the honour to experience it quite often - are her exceptional cooking skills.

On one occasion V. Weisskopf came back from Vienna to Val's home with a Sacher Torte (tart).

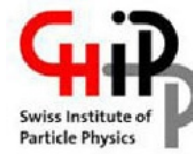
When comparing it to Lia's Torte everybody found Lia's much superior.

I would like to mention also Lia's intelligence and charm, often smoothing out frictions.



ETH Institute for
Particle Physics

Lia Telegdi



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Val Telegdi: years 1946 - 1951

Val was given a thesis subject using emulsions:

Investigation of the photodisintegration of ^{12}C into three Alpha Particles.

For this purpose he used the 32 MeV Betatron at the Kantonsspital.

There he met R. Wideröe. Another person who - according to him - had
been forgotten in Stockholm.

Finally, it was luck that he was given work using emulsions while his PHD
colleagues were doing - more respectable - hardware. Later in Chicago, he
used this emulsion technique - together with J. Friedman -
to investigate parity violation in the $\pi - \mu$ decay.

In the fifties the university of Chicago was the Mecca of physics.

Val made an application to E. Teller for a job but he was refused.

Then a miracle happened - according to Val:

V. Weisskopf asked him what he wanted to do after his doctorate.

Val's answer: if Switzerland is too small for Swiss physicists then this is more than ever true for myself.

V. Weisskopf tried to find a position for Val at MIT in vain and recommended him then to Fermi.

In 1951 Val was hired as instructor for one year at the University of Chicago, where he stayed till 1976, climbing up the career ladder till he became in 1972: "Enrico Fermi Distinguished Service Professor".

Val Telegdi: years 1951 - 1976

Val's senior colleagues in Chicago were:
Chandrasekhar, Fermi, Maria Goeppert-Mayer, Teller, Urey and Wentzel.
Among the “young Turks” were Garwin, Gell-Mann, Goldberger and later
Friedman. Val called the time in Chicago the “quarter century which saw
the most turbulent developments in particle physics”

He once wrote that it was a time when even an ordinary physicist could
make seminal discoveries.

To judge the importance of the experiments listed in the following it should
be noted that they were all answering the key questions of their time.

One of the original P-violation experiments, using emulsions to study

$$\pi \rightarrow \mu^+ + \nu_\mu, \quad \mu^+ \rightarrow e^+ + \nu_e + \bar{\nu}_\mu. (1957)$$

Proof of V – A in the decay of free polarized neutrons.(1957)

The mixed-strangeness property of the K_L^0 .(1958)

The well-known BMT equation.(1959)

Hyperfine effects in muon capture.(1961/62)

Hyperfine effects in muonium \rightarrow precise value of α . (1970/71)

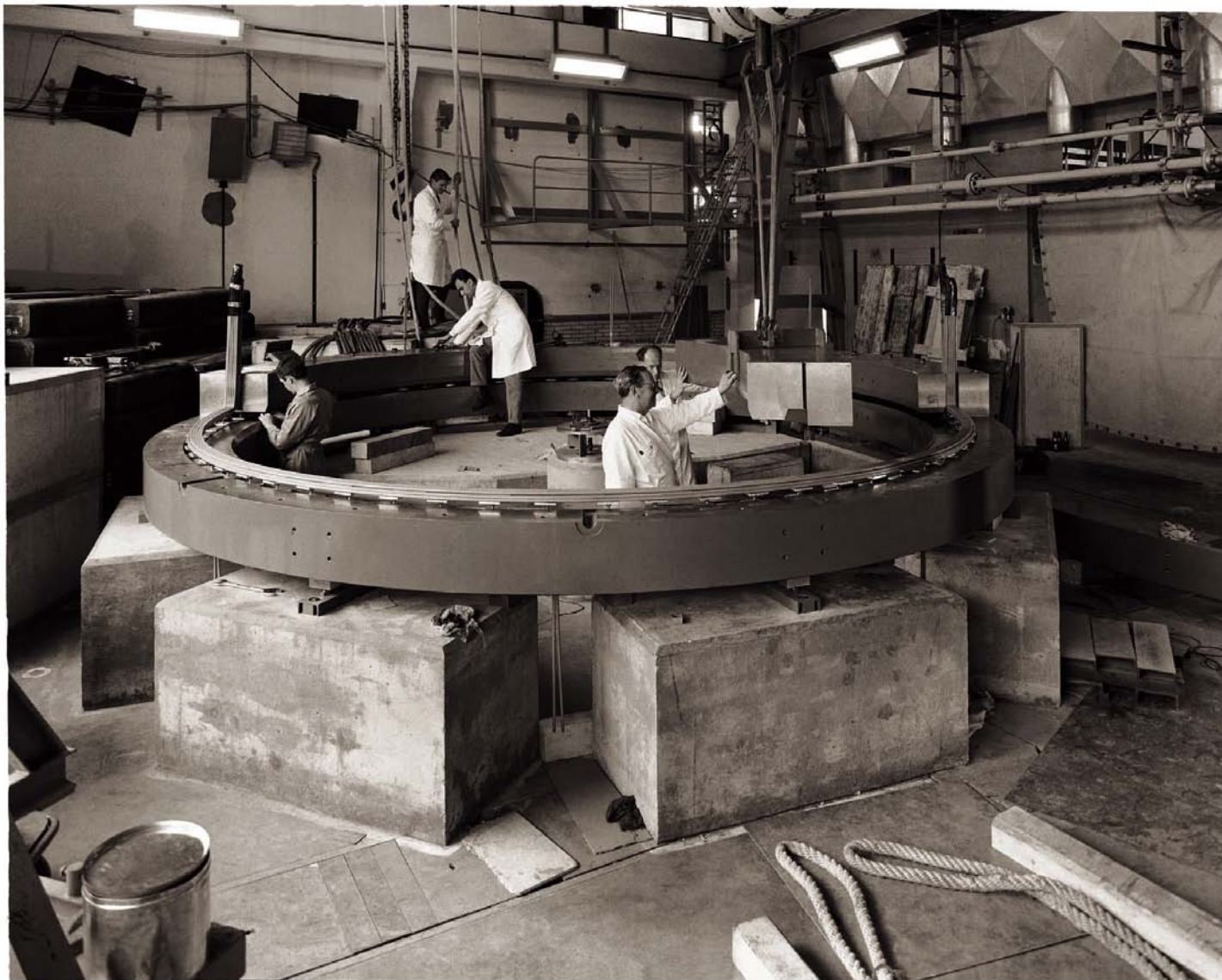
$K_L^0 \rightarrow K_S^0$ regeneration on electrons yielding a mean electromagnetic
radius for neutral kaons etc. (1978)

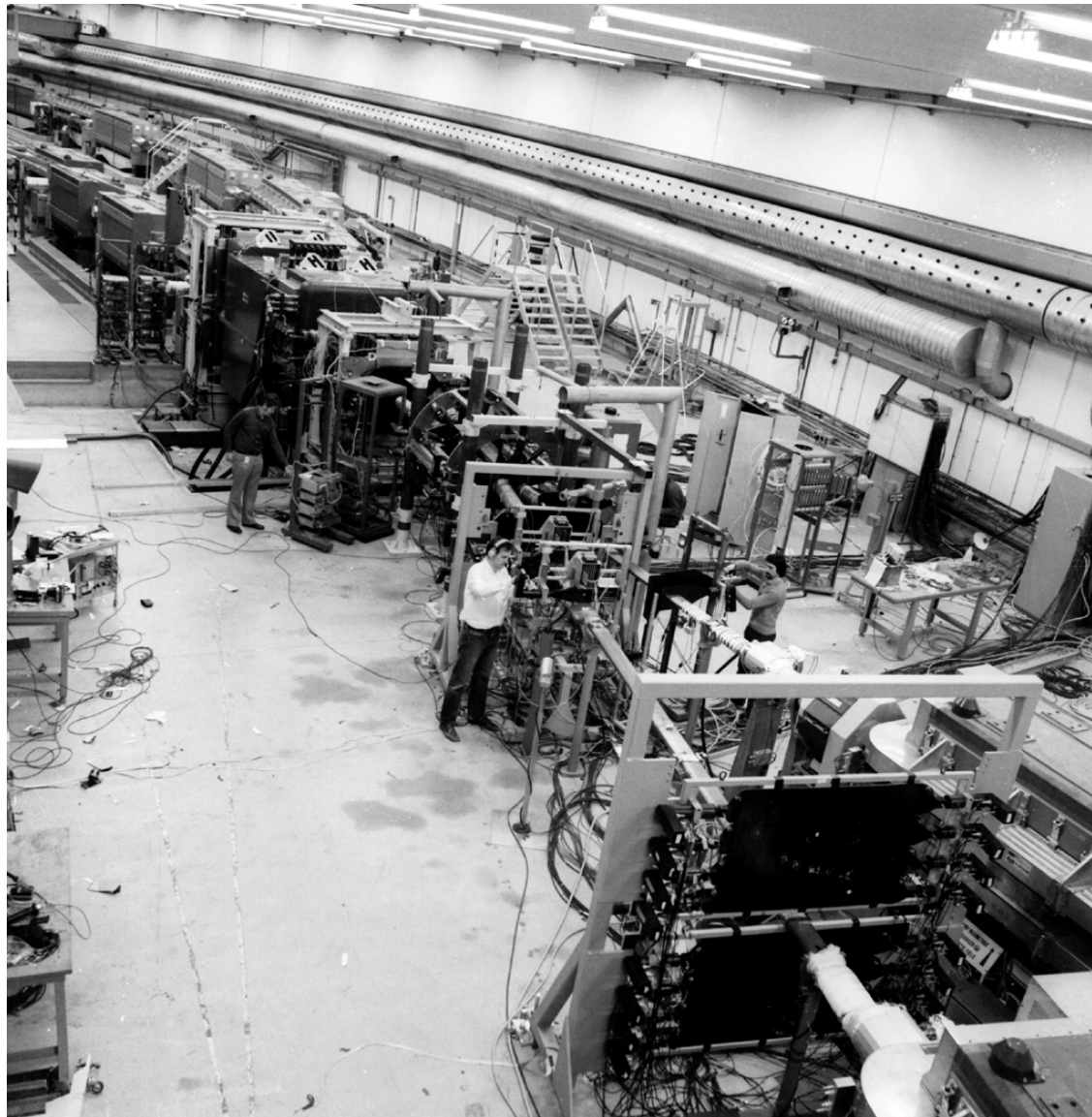
During his time in Chicago he made frequent visits to CERN in the
summer.

Together with G. Charpak, F.J.M. Farley, R.L. Garwin, T. Muller, J.C. Sens
and A. Zichichi he did

the first measurement of the anomalous magnetic moment of the muon -
the so-called $g - 2$ experiment - at CERN (1961) → picture.

At the ISR he participated in the R603 experiment which measured
diffractive dissociation. He made significant contributions to the
recoil spectrometer → picture.



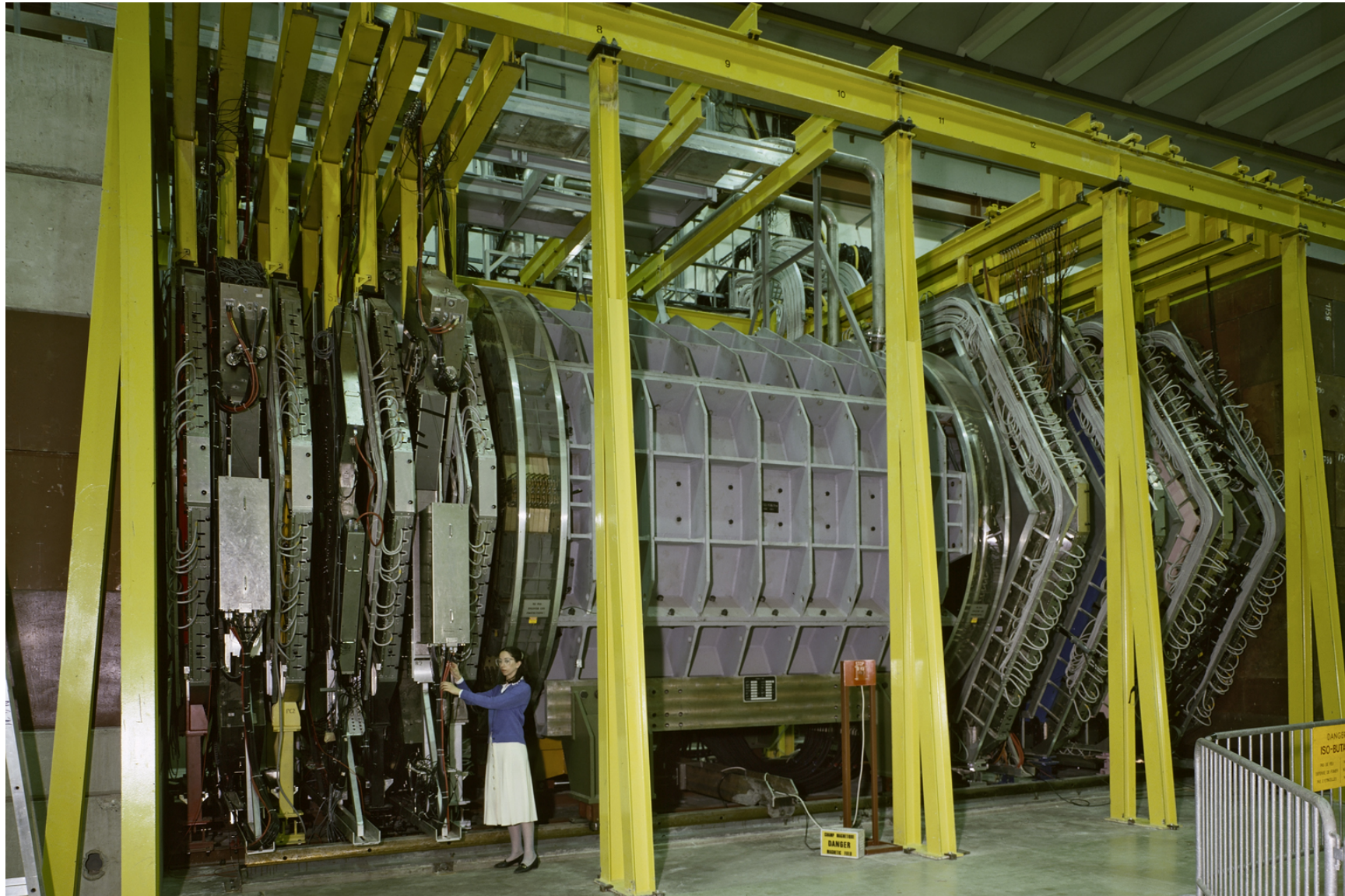


In 1976 Val returned to Europe. He became professor of Physics at
ETHZ.

Together with Hans Hofer he founded the Laboratory for High Energy
Physics. In Zürich he had a group working on atomic physics experiments
and a group at PSI working on muon physics.

At CERN he initiated the NA10 experiment which did a precise study of
dimuon production by pions on nuclei → picture.

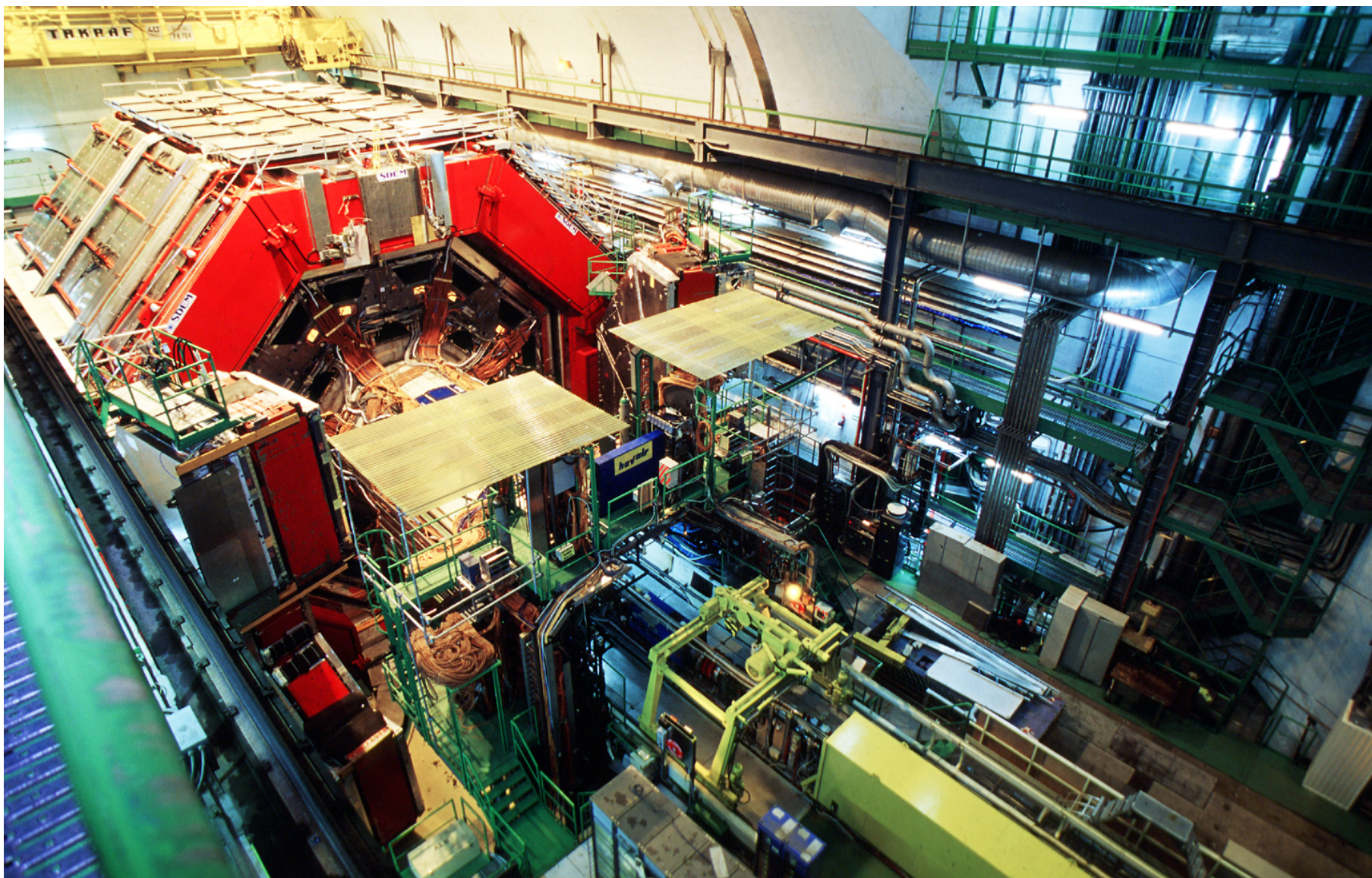
A colleague of Val said that Val's wave function had three peaks:
one located in Zürich, one in Geneva and one at Caltech where
Lia and Val spent most of their winters.



From 1978 - 1981 he was member and from 1981 - 1983 chairman of the CERN Scientific Policy Board at a time when LEP was being established.

Although the ETH group had opted for the ALEPH experiment he “convinced” us to join the L3 experiment → picture.

View of the L3 experiment



In 1991 he shared the Wolf prize with M. Goldhaber for their separate seminal contributions to nuclear and particle physics, particularly those concerning the weak interactions involving leptons.

In 1995 he got the E. Lilienfeld prize “for his ingenious experiments to determine the characteristics of the elementary particles, for his discoveries concerning the nature of the weak forces as revealed by the capture and decay of muons, for his rigorous analysis of particle interactions, and for his ability to inspire and enlighten diverse audiences.”

Val was member of many scientific societies:

In the following only the countries are listed:

France, Germany, Great Britain, Hungary, Italy, Russia, Sweden and USA.
The following picture shows Val when he received the medal of foreign member of the Russian Academy of Science in June 2000.



Val receives the medal of foreign member of the Russian Academy of Science.

Lectures for PhD students instead of autodidactic training.

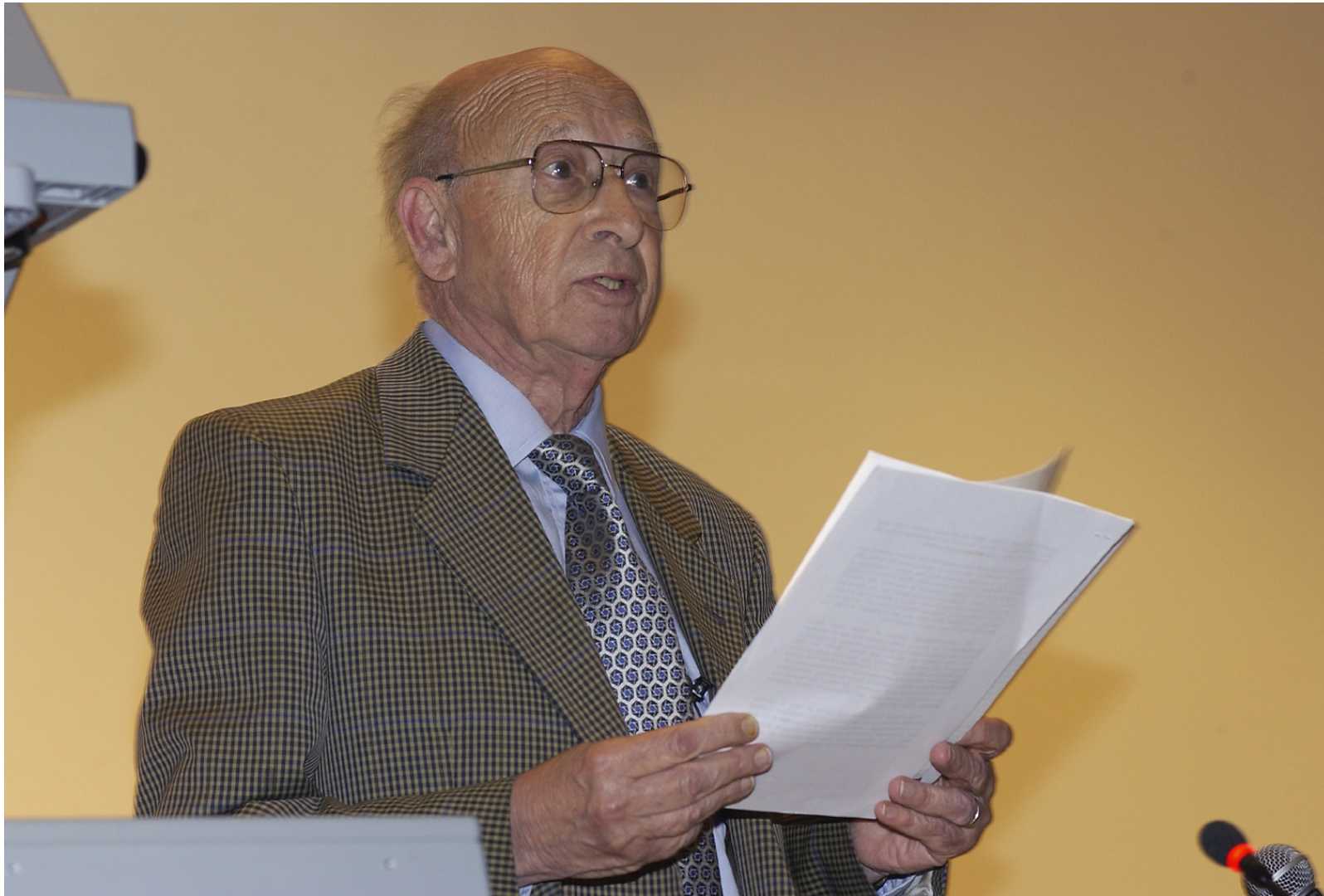
In the lectures: less material, more compulsory exercises -
students instead of listeners.

Quantum Mechanics for experimentalists, not just an examination item but
requisite know-how.

Examinations at the end of each semester
and not piling up a stock of knowledge.

Discussions in the department about the contents of the lectures.

More “glasnost” in appointments of professors.



We lost a Great Physicist.

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