



Aristotle University of Thessaloniki Faculty of Sciences



The Faculty of Sciences of Aristotle University of Thessaloniki

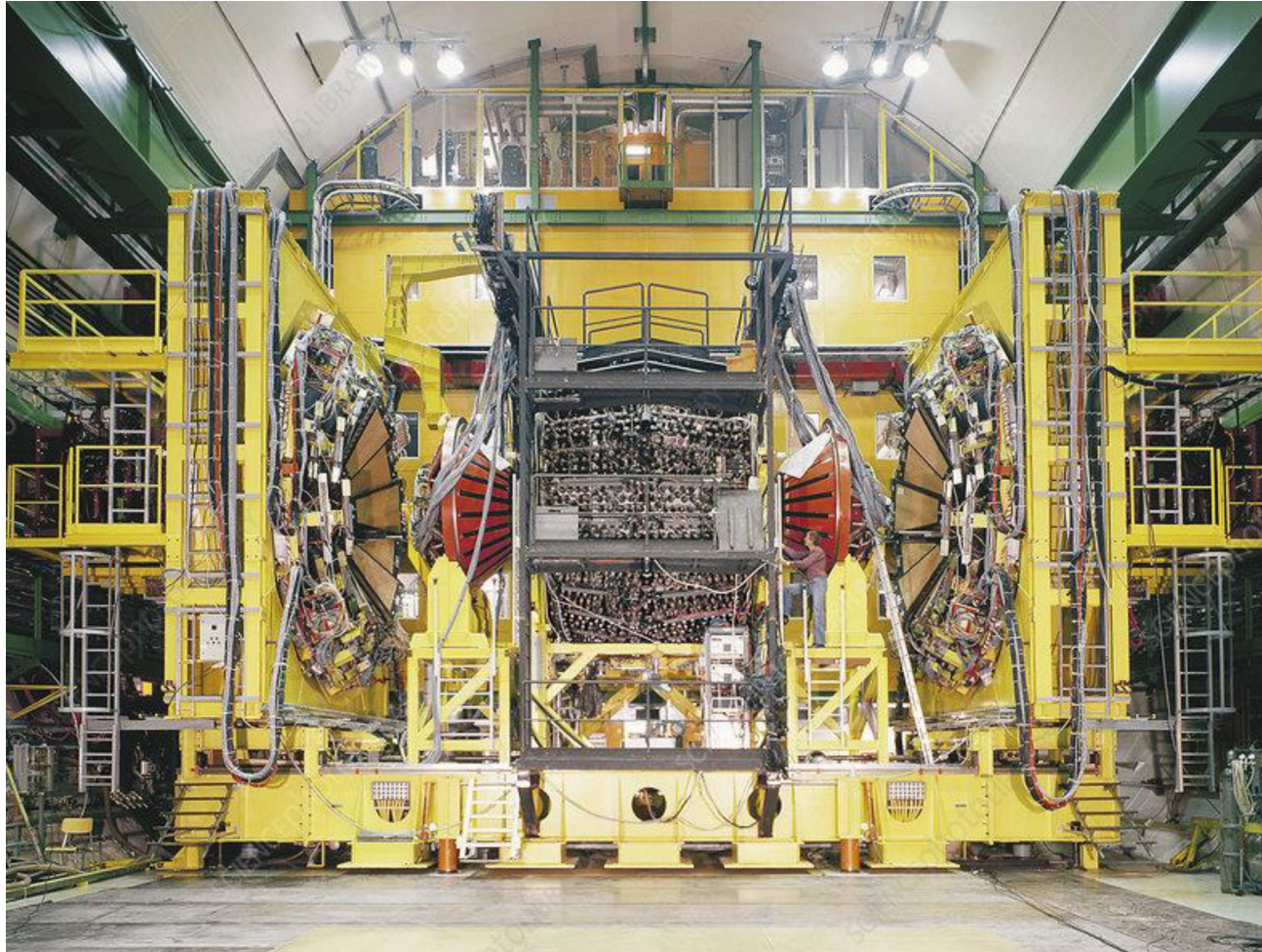
Honors

Peter Jenni

For:

- His Exceptional Contributions to Science through the founding and leading for almost two decades the ATLAS experiment that lead to the Higgs Discovery in 2012
- His tireless financial and moral support to the young scientists all-over the world
- His Substantial and Continuous Support to the Aristotle University of Thessaloniki and the Greek ATLAS community, leading to three decades of significant contributions to the ATLAS experiment.

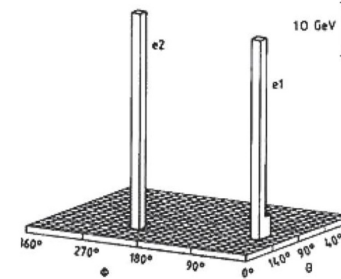
UA1 & UA2 discover the W&Z bosons at the Spbarp Collider 1983-1984



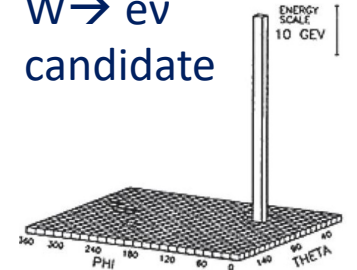
The UA2 experiment at the Spbarp collider
(1981-1985)

UA2 observes the Z and W bosons

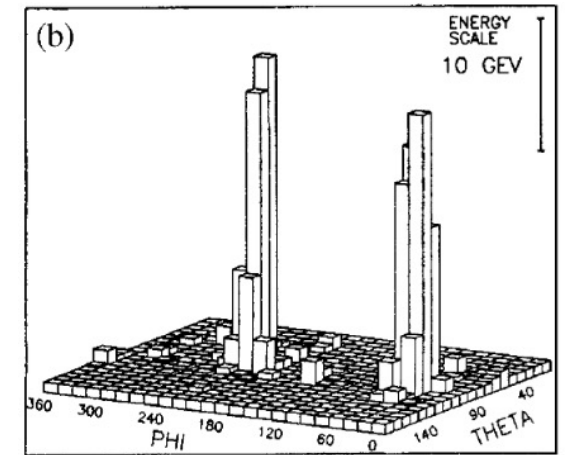
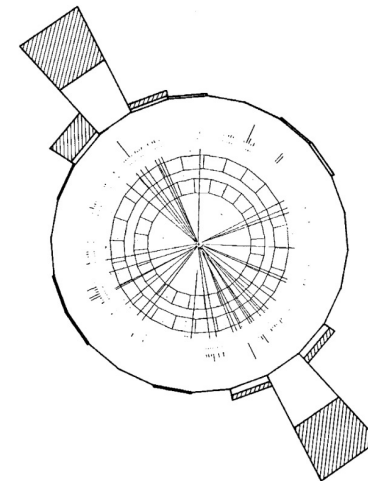
Z \rightarrow ee candidate



W \rightarrow ev
candidate



UA2 reports first clear evidence of jet production



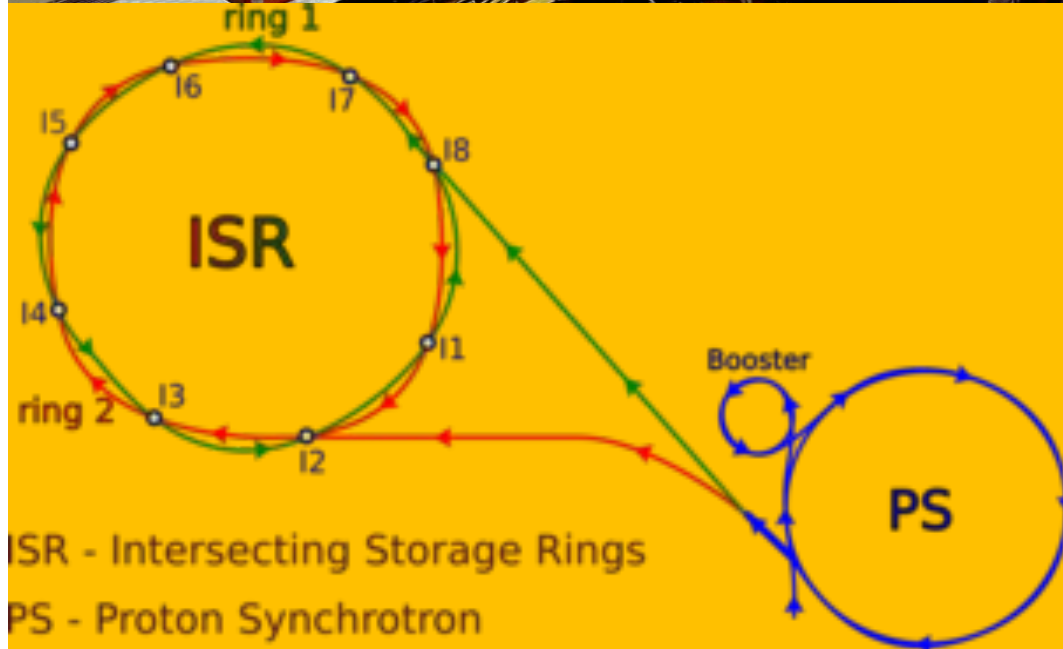
**Peter Jenni played a major role to both
of these Important Discoveries**

The Scientific Excellence and Integrity

August 1977
Typical experiment (R702) at ISR

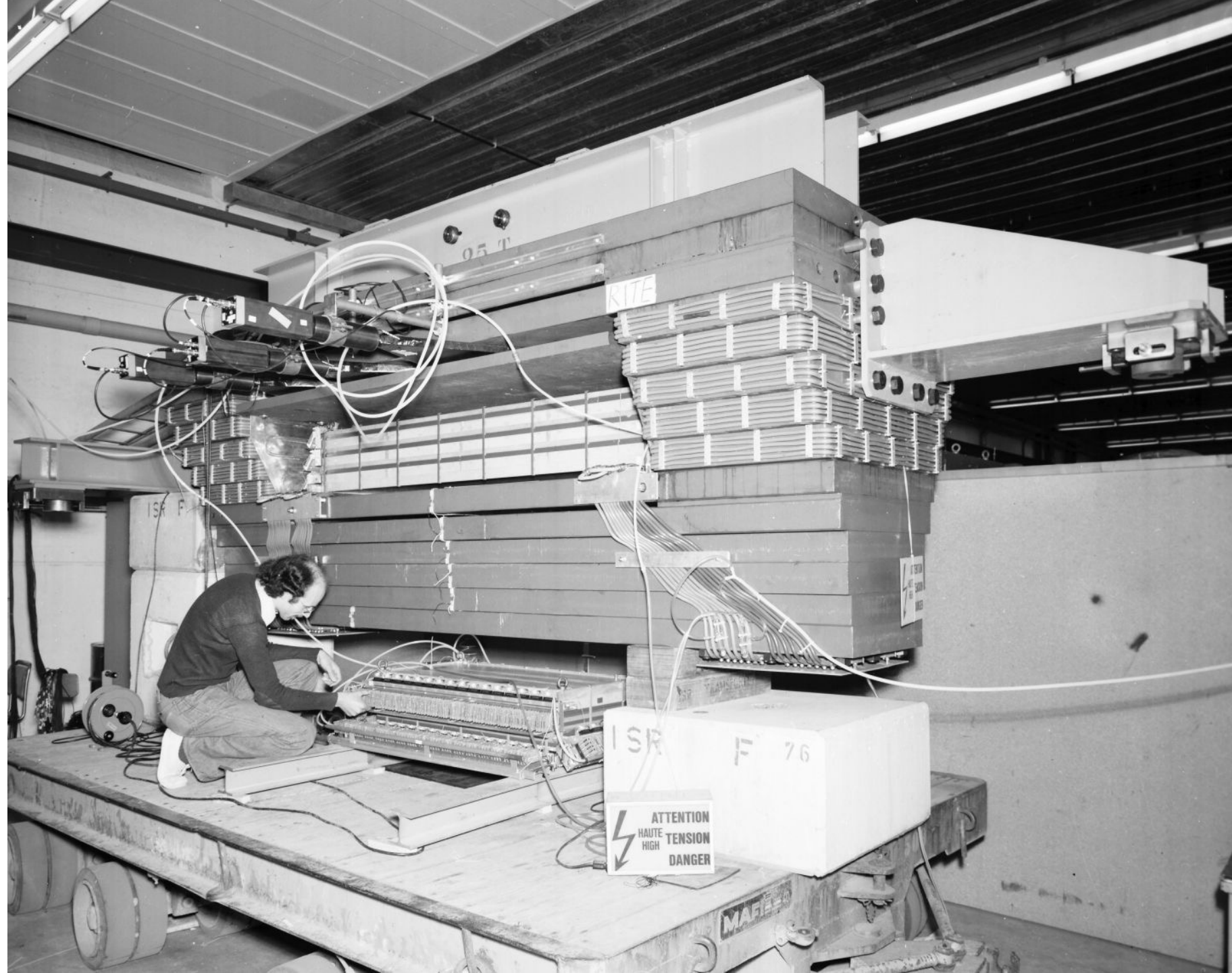


ISR
Intersecting Storage
Ring
1971-1984
Circumference: 942 m
max Collision Energy:
63 GeV
peak luminosity:
 $1.4 \times 10^{32} \text{cm}^{-2} \text{sec}^{-1}$



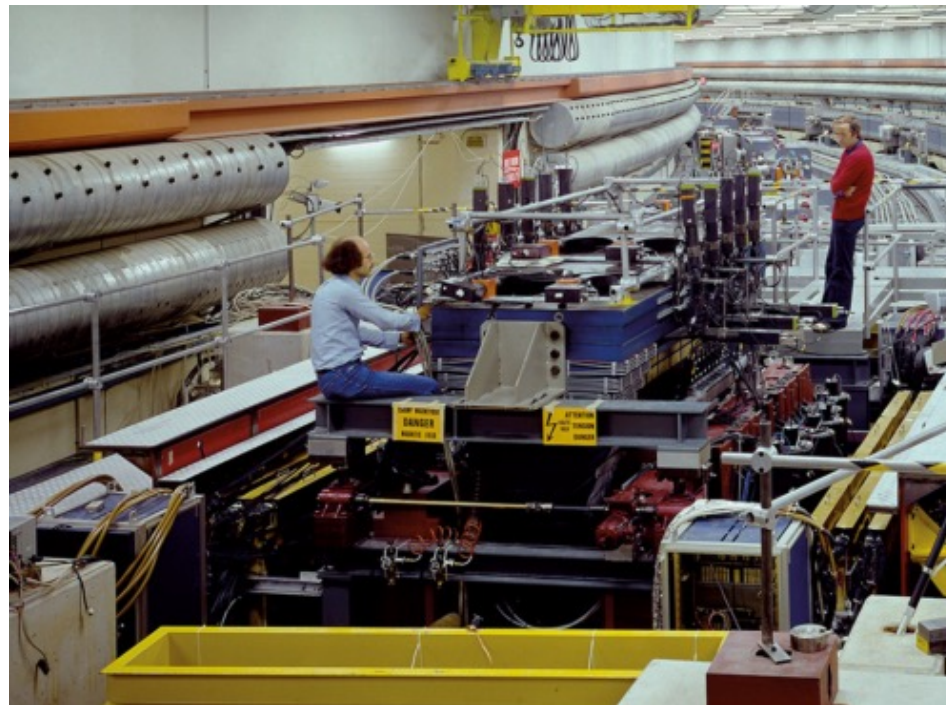
Peter Jenni at Work !
Early 1976
Preparing the Muon
Spectrometer
for the ISR R702
experiment

... just as inspiration
to our students who
are eager for
research and wish to
follow similar paths
in their careers !

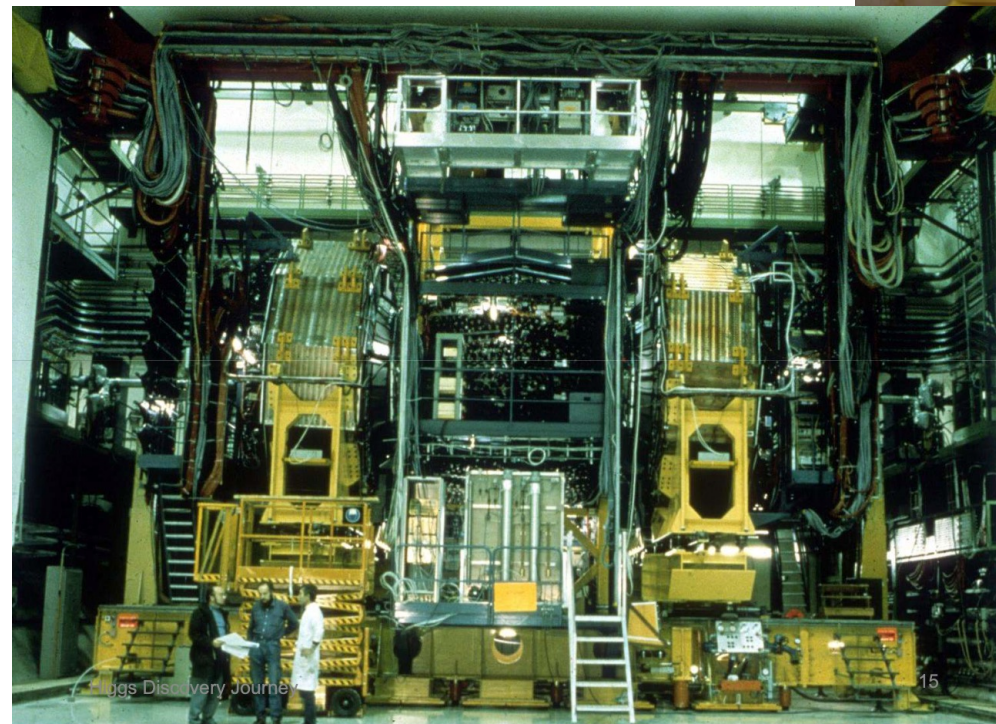


The Scientific Excellence and Integrity

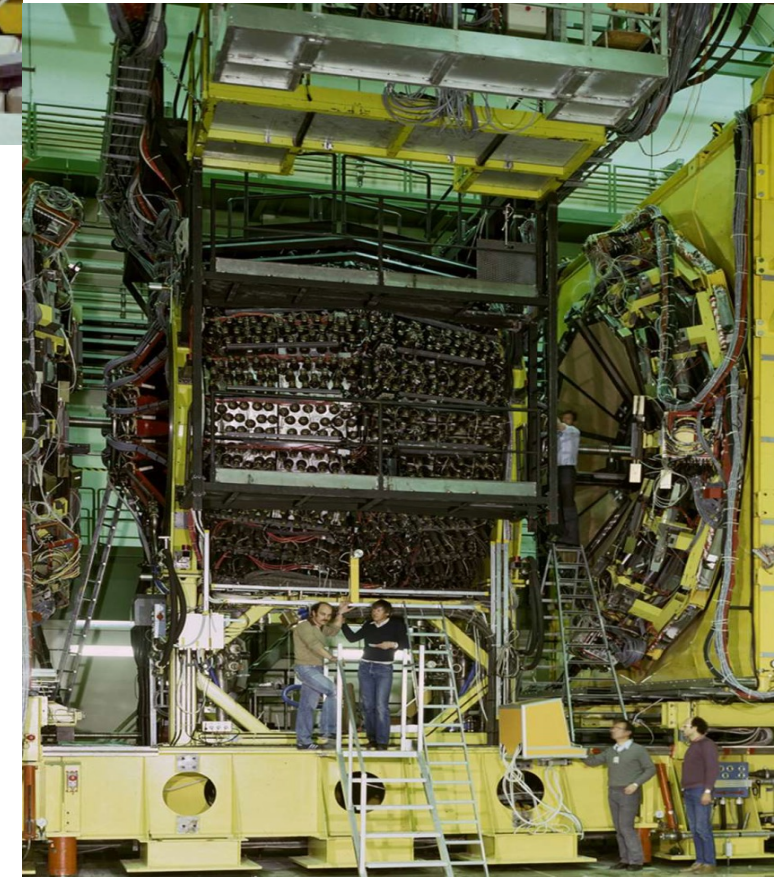
From an experiment at the ISR
-the predecessor of hadron colliders



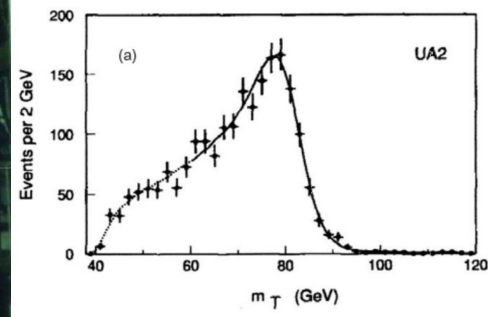
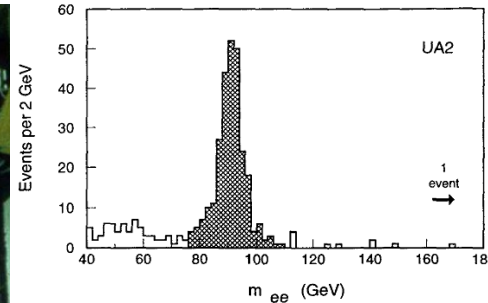
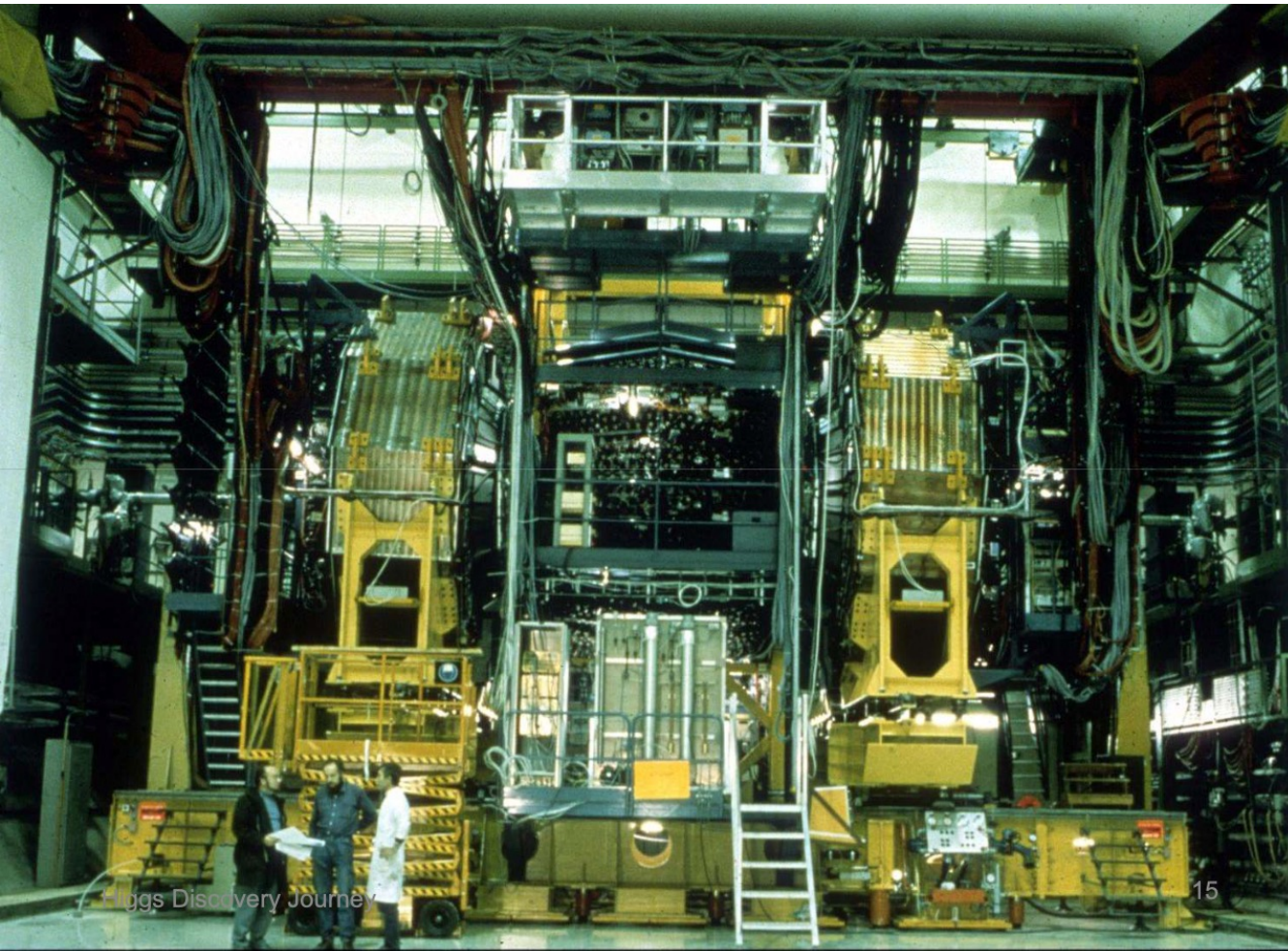
To the UA2 experiment
at the Spbarp collider
(1981-1985)



To the upgraded UA2' experiment
A fully **non-magnetic** experiment,
with **hermetic calorimetry**
(1987-1990)



The Scientific Excellence and Integrity



$$m_W = 80.84 \pm 0.22 \pm 0.17 \pm 0.81 \text{ GeV}$$

$$m_Z = 91.74 \pm 0.28 \pm 0.12 \pm 0.92 \text{ GeV}$$

$$\Gamma_W = 2.10 \pm 0.16 \text{ GeV}$$

$$\sin^2 \theta_W = 0.2234 \pm 0.0072$$

$$\alpha_s(M_W^2) = 0.123 \pm 0.018 \pm 0.017$$

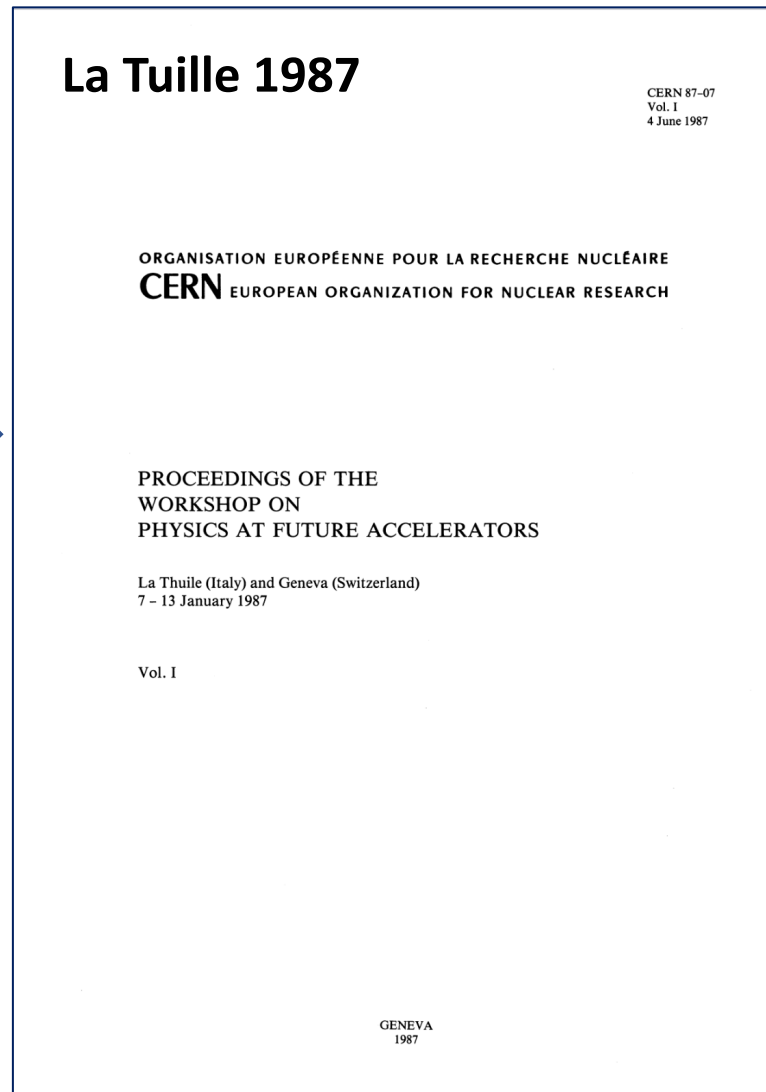
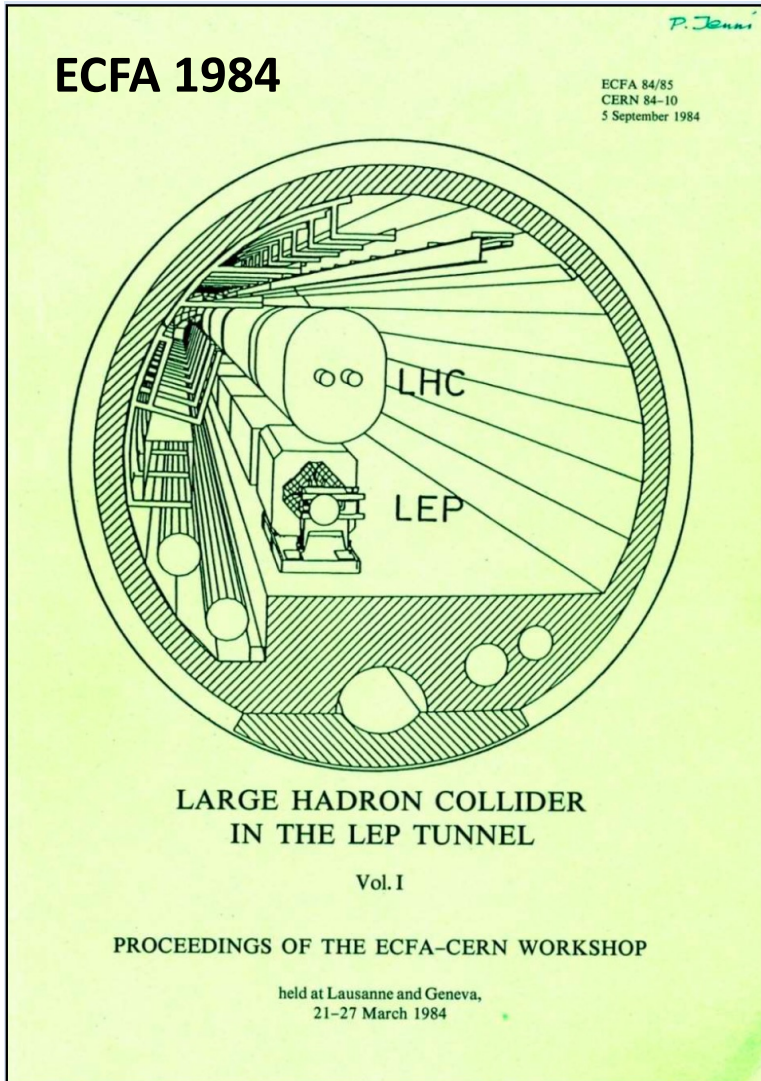
Under the guidance and hard work of Peter Jenni, UA2', a hermetic, non-magnetic detector with excellent calorimetry and missing E_T measurement, produces beautiful results

Peter Jenni, CERN staff at the time, was the Project Leader of the new End Cap Calorimeter

The Scientific Excellence and Integrity

Mid 80's :

Peter develops strong interest in the physics and instrumentation in Future Colliders



From UA1 and UA2
discoveries
he becomes
convinced that the
'dirty' hadron
collider can do
discovery physics !



**Thinking of all the
aspects of a
General Purpose
Detector**

The Scientific Excellence and Integrity

The shift towards the LHC

A very simplified summary:

detector signature	accessible physics process
μ^\pm	$H \rightarrow ZZ \rightarrow 4 \mu^\pm$ $Z' \rightarrow \mu^+ \mu^-$ (σ_m ?)
$\mu^\pm, \text{jets}, p_T$	add: $H \rightarrow ZZ \rightarrow \mu^+ \mu^- \nu \bar{\nu}$ $W' \rightarrow \mu^\pm \nu$ compositeness \tilde{q}, \tilde{g} (direct decays) jet spectroscopy
$e, \mu^\pm, \text{jets}, p_T$ (non-)magnetic central part (reduced tracking)	add: 4x rate $H \rightarrow ZZ \rightarrow 4e^\pm$ 2x rate $H \rightarrow ZZ \rightarrow \ell^+ \ell^- \nu \bar{\nu}$ 2x rate Z', W' \tilde{q}, \tilde{g} (also cascade decays) mass resolution e, μ heavy Q, L $H \rightarrow \gamma\gamma$
$e^\pm, \mu^\pm, \tau^\pm, \text{jets}, p_T$ full momentum and tracking	add: more redundancy and cross-checks on above, $H^\pm, \text{SUSY-H},$ heavy flavour tags

A stolen Transparency...

Lepton detection at LHC is crucial. Small rates are expected for many potential signals

⇒ detection of e and μ

Muons are relatively easy to identify but hard to measure well

(precise μ measurements may mean hundreds of MCHF)

Electrons are relatively easy to measure but hard to identify at 10^{34}

(radiation-hard inner detector)

Lepton isolation criteria are also important to reject backgrounds from heavy flavour decays

Already in mid-eighties Peter was advocating a General Purpose Detector Capable to find the Higgs, SuperSymmetry, other possible New Physics like charged Higgs, Heavy Quarks and Heavy Leptons

The Scientific Excellence and Integrity

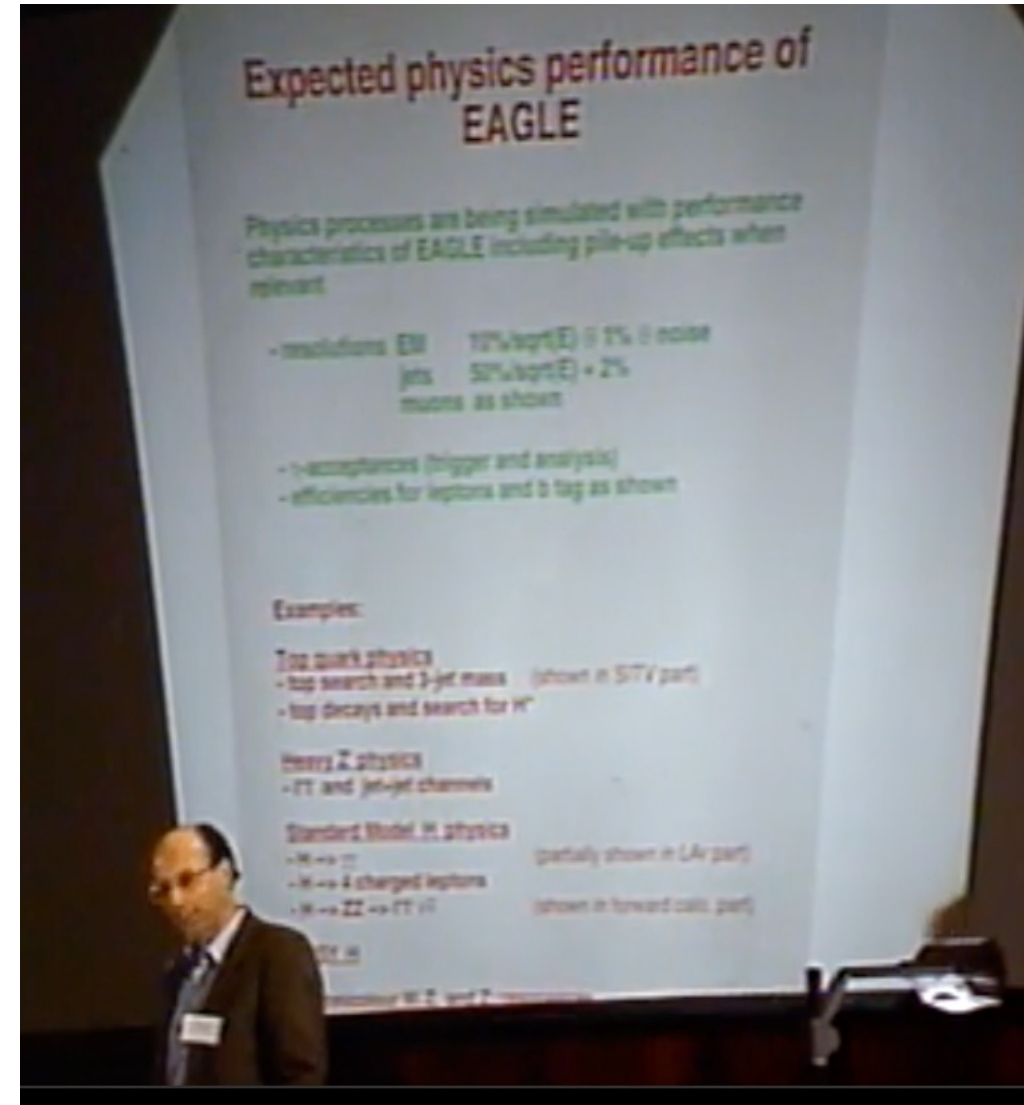
In March 1992 at
the ECFA meeting in
Evian

Peter Jenni
presents the EAGLE
detector

Emer. Prof. Manolis Dris from NTUA remembers: “I joined the EAGLE collaboration proposal (Experiment for Accurate Gamma Lepton and Energy measurements), mainly because Peter was the leader.

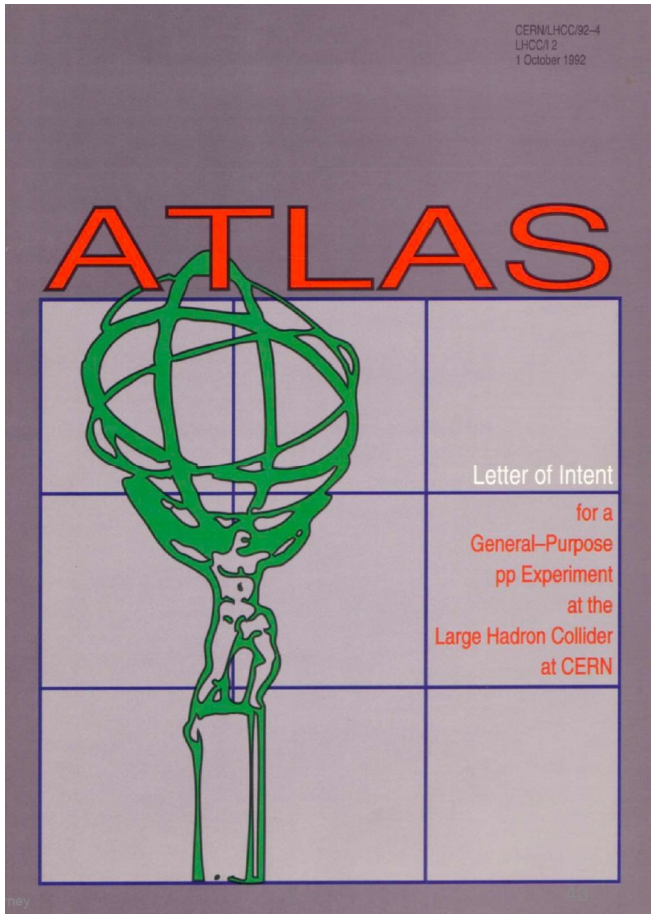
I participated in the Evian March 1992 meeting. In that meeting it was suggested that the two proposed experiments EAGLE and ASCOT (Apparatus with Super Conducting Toroids) should join efforts to form the ATLAS (A Toroidal Lhc ApparatuS) collaboration. Some Greek groups joined ATLAS at that time.

Peter was the leader of ATLAS and as expected, an excellent choice. He performed greatly and managed to smooth out all eventual problems/disagreements for many years in that position.”

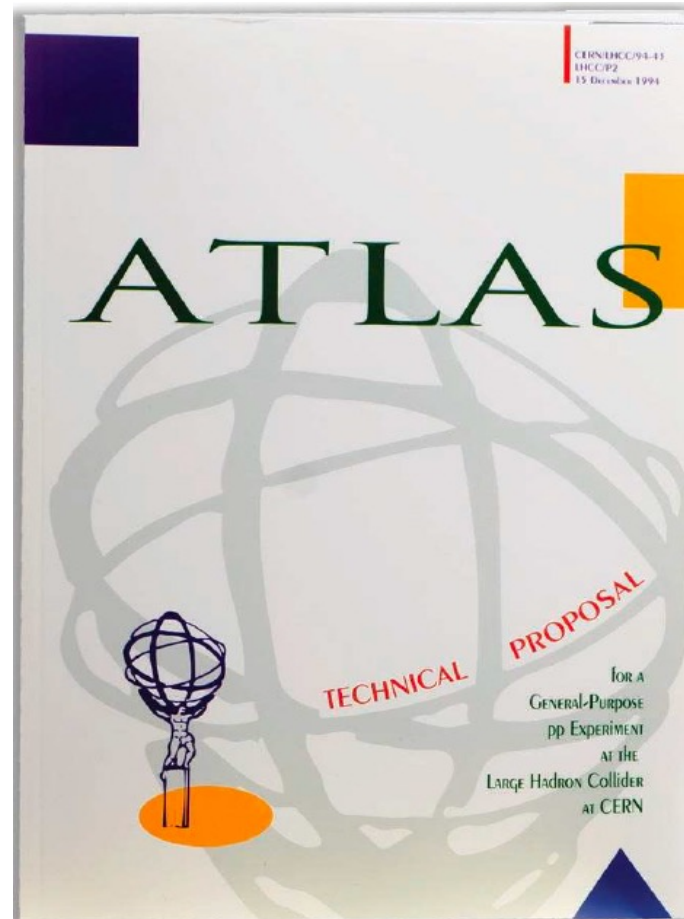


The Scientific Excellence and Integrity

From the merging of
EAGLE and ASCOT
The ATLAS was formed !
**In October 1st 1992 the LOI
was submitted to LHCC**



The Technical Proposal was
Submitted to LHCC (Dec 1994)
**140 Institutions about 1500
authors**



Peter Jenni,
**after the official approval of
the ATLAS Experiment by
the LHCC, was re-elected
several times as
Spokesperson
of the collaboration and
retired from this duty in
February 2009**

**However,
he is still strongly involved and
cares about the Collaboration**

Forming and Keeping together an International Collaboration



**Peter brought together a truly international collaboration.
From China to Russia to Latin America to Africa**



Beyond borders and cultures

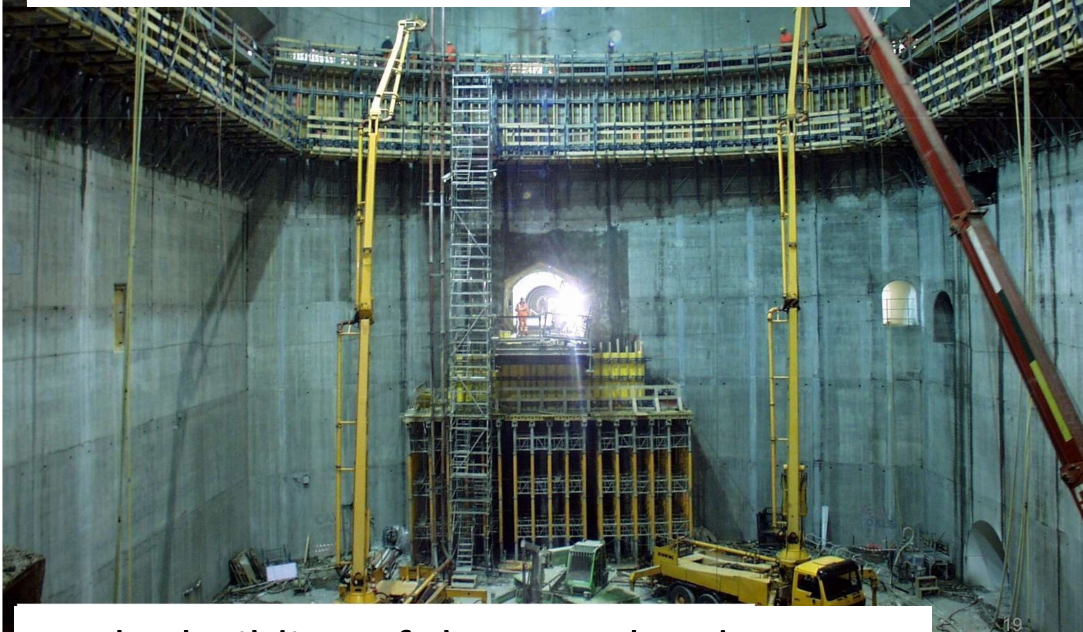
Provided guidance and support to **small groups** to work independently in their own laboratories, their own countries and **flourish in a large collaboration !**

It has been a miracle to see during the construction of ATLAS, how different **pieces of complex detectors built and tested across continents they fit to mm with all the others !**

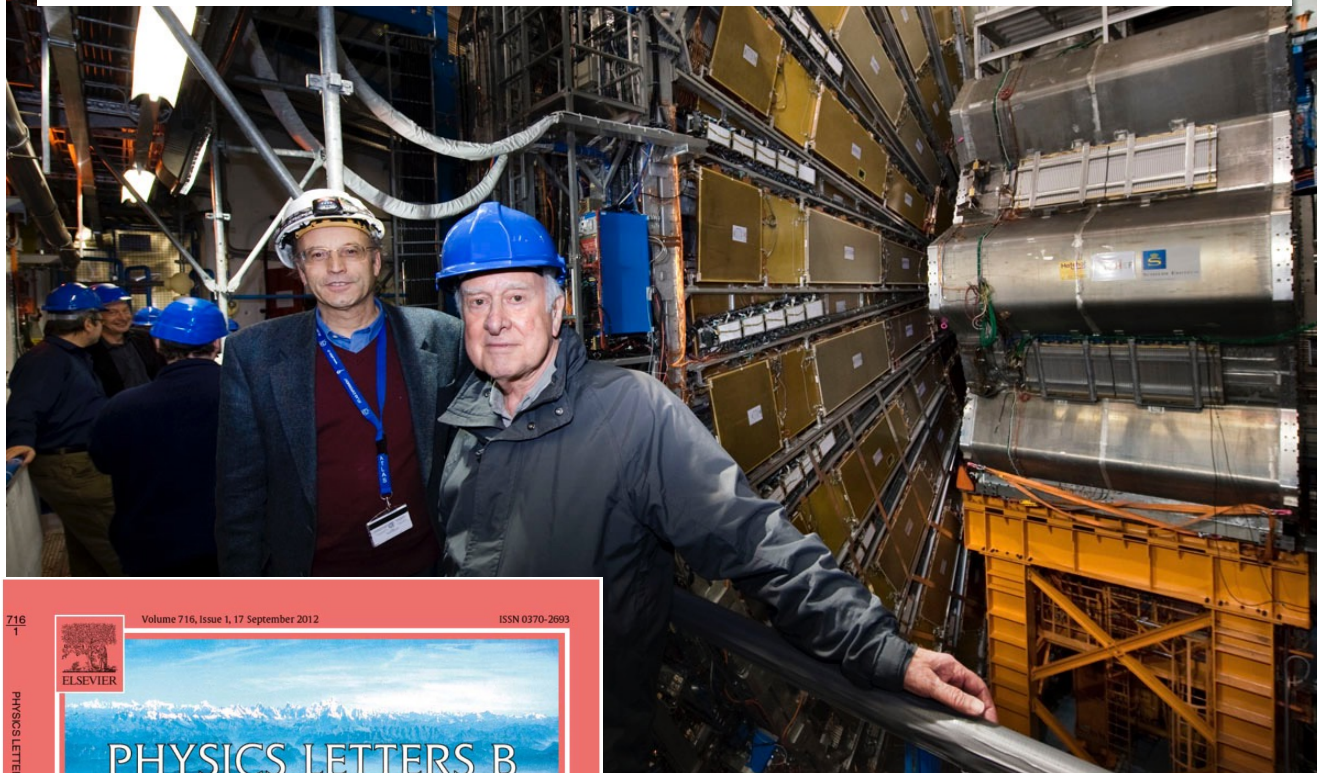
The experience of those years was magical ! and the strong pillar behind was **Peter who inspired his close collaborators and his successors!**



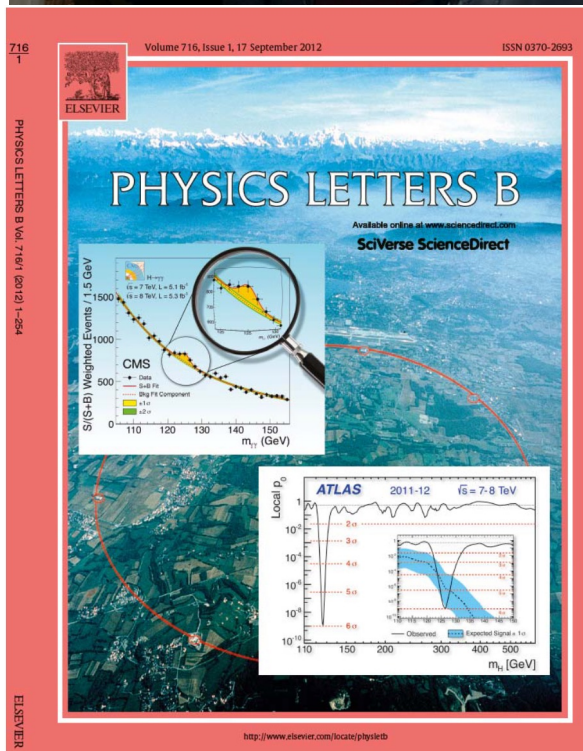
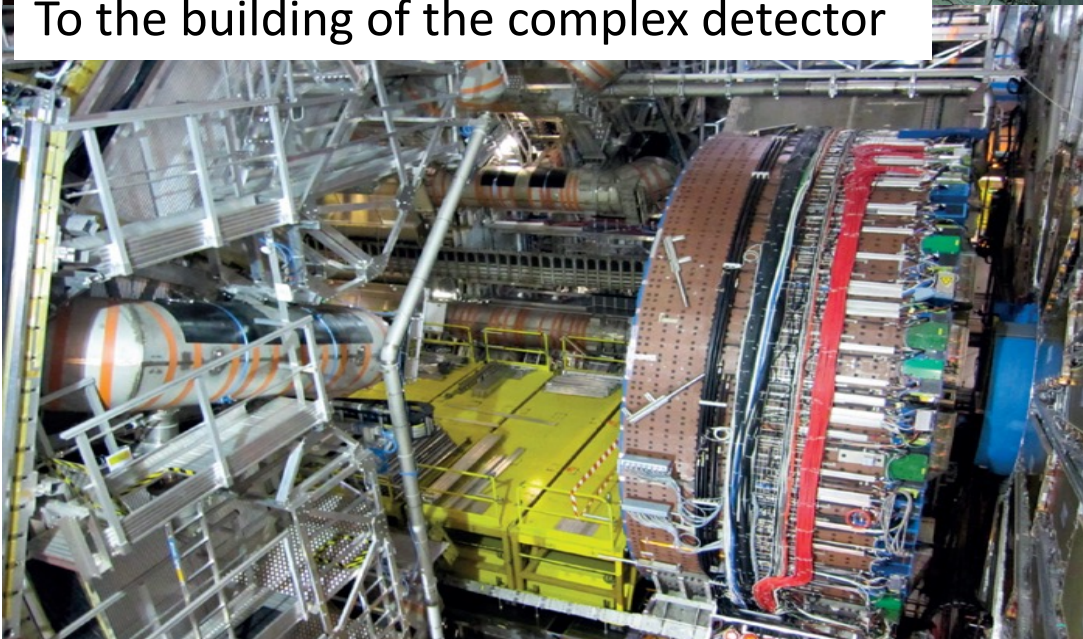
From the excavation of the ATLAS Cavern (1998- 2003)



To the discovery of the Higgs boson (2012)



To the building of the complex detector



Peter was the main inspirer and leading figure



The Scientific Excellence and Integrity

The Recognition

In 2013 Peter receives the:

2013 Special Breakthrough Prize in Fundamental Physics

“For his leadership role in the scientific endeavour that led to the discovery of the new Higgs-like particle by the ATLAS and CMS collaborations at CERN's Large Hadron Collider”

Peter Jenni, together with his successor in ATLAS and currently director of CERN **Fabiola Gianotti**, using their award money, established in 2013 the **ATLAS PhD Grant, a flagship programme of the CERN & Society Foundation**



The Scientific Excellence and Integrity

In his own words: **“When Fabiola Gianotti and I received the Fundamental Physics Prize, it was clear to us that we wanted to give something back to ATLAS”**



More than 17 nationalities spanning across the world map, from Africa, Asia, South America and Europe are recipients of the Grant

Now, the ATLAS PhD Grant relies on private contributions through the CERN & Society Foundation to continue its legacy.



The Support and Encouragement to the Greek ATLAS Community and to AUTH in particular



Workshop on Recent Advancement in Particle Physics and Cosmology

2005: Greek HEP, Thessaloniki
2010: Greek HEP, Thessaloniki

Numerous visits to AUTH and Greece in general:

- 2003: Support NKUA for Physics Workshop
- Encouraged complementarity between the three institutes
- Held numerous discussions with the Funding Agency:
 - Praising the quality of our work and
 - Expressing the confidence of the ATLAS management that we are able to meet the challenge and complete the project on time !

21-24 APRIL, 2005

ARISTOTLE UNIVERSITY OF THESSALONIKI SCIENTIFIC PROGRAM

Sunday 24th of April 2005 Morning Session (A31)

9:00-9:40	Jenni Peter CERN	The ATLAS experiment getting ready for LHC
9:40-10:20	Huhtinen Mika CERN	The CMS Experiment at LHC: Status and Perspectives
10:20-10:40	Alexopoulos Theodoros National Technical University of Athens	Status report on the BIS ATLAS chambers

2010 Workshop on Recent Advances in Particle Physics and Cosmology

Aristotle University of Thessaloniki
Hellenic Society for the Study of High Energy Physics

Thessaloniki, 25-28 March 2010, Greece

[Invited Speakers](#) | [Scientific Program](#) | [Committees](#) | [Participants](#) | [Statistics](#) | [Register](#) | [Other Info](#)

19:20 - 19:35	Chouliaras Athanasios Aristotle University of Thessaloniki <i>"Study of a Micromegas + GEM prototype for the ATLAS upgrade"</i>
19:35 - 19:50	Petridis Andreas Aristotle University of Thessaloniki <i>"Studies of Diboson Production $ZZ(*) \rightarrow 4l$ with the ATLAS Detector"</i>
Friday March 26th 2010 (A31 Auditorium)	
09:00 - 09:40	Jenni Peter CERN <i>"The Large Hadron Collider Finally Entering Operation: an Overview of The LHC Programme"</i>
09:40 - 10:20	Tselmelis Emmanuel CERN <i>"Future Colliders at CERN"</i>
11:40 - 12:20	Lankford Andrew University of California <i>"ATLAS experiment"</i>
12:20 - 12:40	Prokofiev Kirill CERN <i>"First physics results of the ATLAS experiment at the LHC."</i>
12:40 - 13:05	Chouridou Sofia University of California Santa Cruz <i>"Performance of the ATLAS inner detector"</i>

The Support and Encouragement to the Greek HEP and in particular the Greek ATLAS Community

Emer. Prof. Manolis Dris from NTUA writes:

... “A great achievement of the Greek groups, accomplished under Peter’s guidance, was the successful collaboration of the NKUAthens, the NTUAthens and the AUThessaloniki in the ATLAS muon spectrometer in order to produce about

30 000 MDT (Monitored Drift Tubes) assembled to 112 BIS (Barrel Inner Small) chambers of several tube-layers.

Peter helped and supported the Greek groups, all along the many year effort, to bring the project to a successful completion. “



Closing...



I did not refer at all to the numerous prizes and Academician positions Peter has been awarded all over the world !

But we did not gather here to load him with just another prize !

I do not think he needs it....

We gathered to express in a simple way our Deep Gratitude to him for the values he stands for, all along his career,

His important contributions

to **Science** and

to **Society**

His tireless and continuous efforts to bring the Greek institutions into a common project and, in particular, his support

to the **Aristotle University of Thessaloniki** to

Form, Grow and Contribute respectably to the ATLAS Collaboration

On behalf of Thales,
of Anaximandros, of Anaximenes,
of Anaxagoras,
of Herakleitos, of Lefkippos,
of Demokritos, of Aristotle
and

Of The ATLAS Team of the
**Aristotle University of
Thessaloniki**
With Gratitude

Αγαπημένε μας Πέτερ
Σε Ευχαριστούμε βαθειά
Μη μας ξεχνάς....



A handmade model of Antikithira Mechanism (1:2 size)
The first known so far Computer of Antiquity



The Antikythera Mechanism is a unique archaeological object
that attests, the level of astronomical knowledge around 150
B.C. and, the level of ancient engineering and technology

To the memory of John Seiradakis