

*From ideas to reality*

*6 Wolf  
10/10/00*

## Particle Physics by beginning of 1982

b - quark	1977	FNAL: CFS
	1978	DESY-DORIS: DASP2, PLUTO

gluon	1979	DESY-PETRA: TASSO
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$\sin^2 \Theta_W =$	0.224 +/- 0.019	$\rho = 0.992 +/- 0.020$
	0.229 +/- 0.010	$\rho = 1.0$

No W, Z	theory:	$M_W = 77.9 +/- 1.7 \text{ GeV}$
		$M_Z = 88.8 +/- 1.4 \text{ GeV}$

No top	$M_{t\bar{t}} > 36 \text{ GeV}$	PETRA
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No Higgs

CERN Sp $\bar{p}$ S : UA1, UA2 data taking started in 1981

# Issues for LEPC

- are the proposed detectors adequate for the physics at LEPI and II
- how many experiments: up to 6 interaction points technically feasible
- will the detectors be ready in time

LEP operation beginning of 1988

envisaged construction time  
for large solenoidal detector magnets: 4 years

also: SLC start up planned for end 1986

---> decision on detectors by end 1982

- cost of detectors and available resources

expect	from member states	150 Msfr
	from CERN	50
	from nonmember states	50
<hr/>		
sum		250

LEP EXPERIMENTS COMMITTEE

Minutes of the First Meeting

On Wednesday and Thursday, 24 and 25 March 1982, the LEP Experiments Committee had its first Meeting.

The LEPC Members are:

*Ordinary Members:*

	Astbury, A.	Rutherford Appleton Lab.
	Bøggild, H.	Niels Bohr Inst., Copenhagen
	Davier, M. <u>i</u>	LAL, Orsay
	Della Negra, M.	LAPP, Annecy-le-Vieux
	Ellis, J.	CERN
T. Ekelöf ←	Flügge, G. <u>i</u>	KfK, Karlsruhe
	Goggi, V.G.	Univ. di Pavia
	Murphy, P.G. <u>i</u>	Manchester
	Peccei, R.	MPI, Munchen
	Sens, J. <u>i</u>	NIKHEF H, Amsterdam
	Strolin, P. <u>i</u>	Univ. degli Studi, Napoli
	Taylor, R.	SLAC, Stanford
	Willis, W.	CERN
	Wolf, G.	DESY, Hamburg
	(Chairman)	

*Ex Officio Members:*

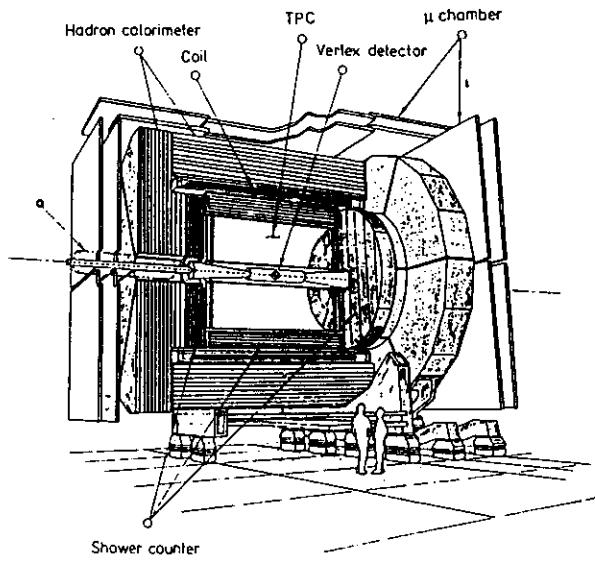
Bonaudi, F.	CERN
Gabathuler, E.	CERN
Hoffmann, H.	CERN
(Secretary)	
Minten, A.	CERN
Picasso, E.	CERN
Schopper, H.	CERN
Wetherell, A.M.	CERN

The LEP Committee appointed for each proposed experiment two referees:

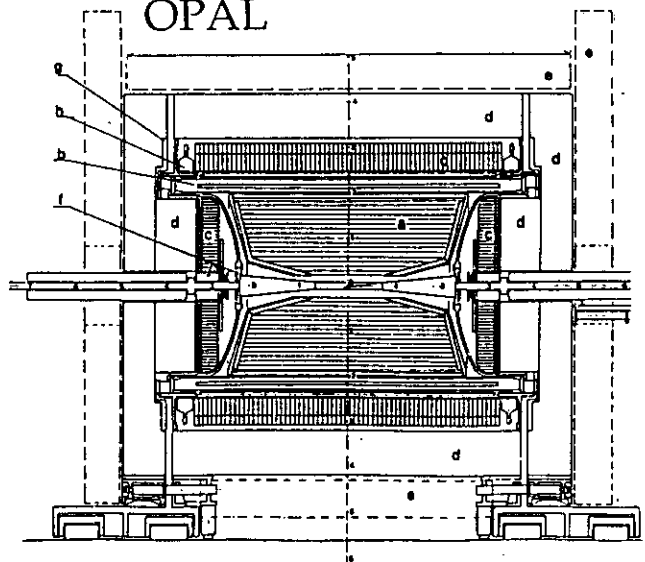
- LEPC/I 1 (ALEPH) H. Bøggild/W. Willis
- LEPC/I 2 (OPAL) V.G. Goggi/W. Willis
- LEPC/I 3 A. Astbury/V.G. Goggi
- LEPC/I 5 (ELECTRA) A. Astbury/M. Della Negra
- LEPC/I 6 (DELPHI) A. Astbury/W. Willis
- LEPC/I 7 (LOGIC) H. Bøggild/M. Della Negra

check cost of detectors H.F. Hoffmann/R. Taylor

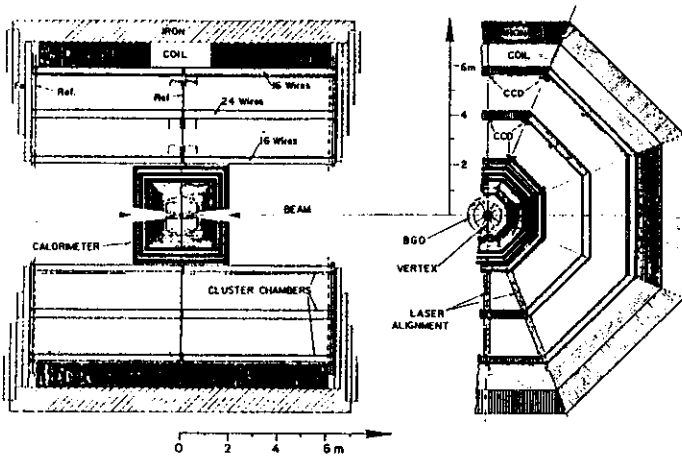
# ALEPH



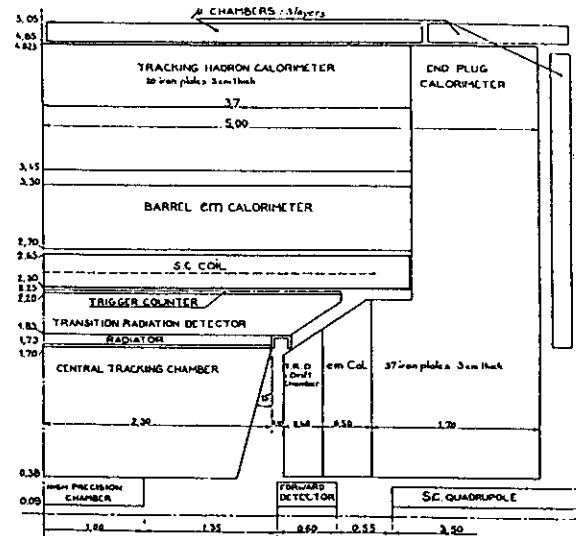
# OPAL



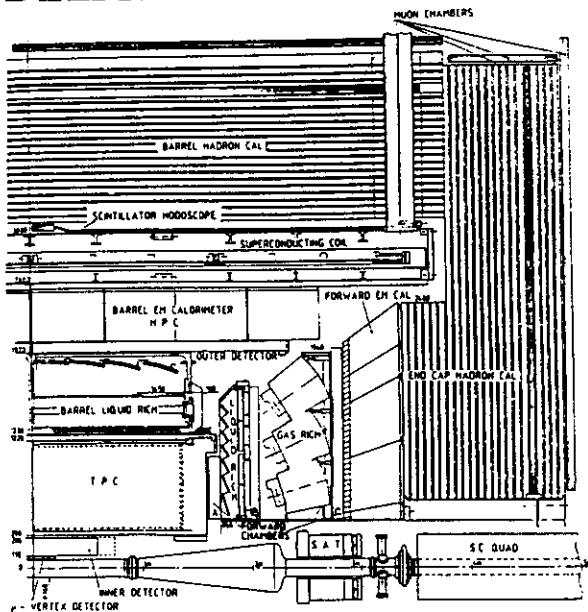
# L3



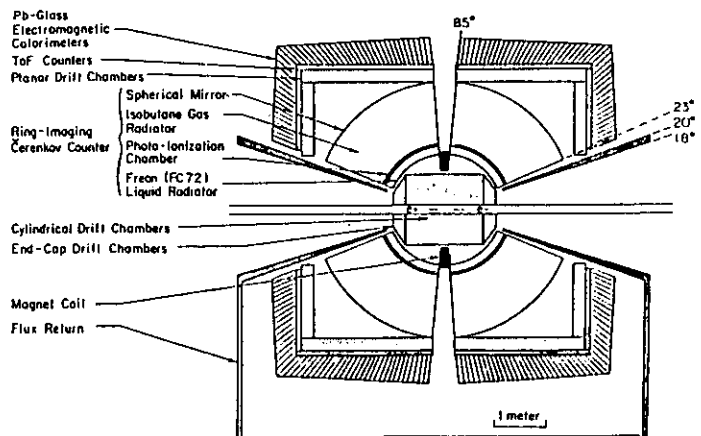
# ELECTRA



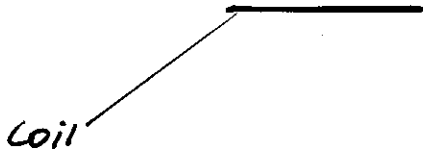
# DELPHI



# LOGIC

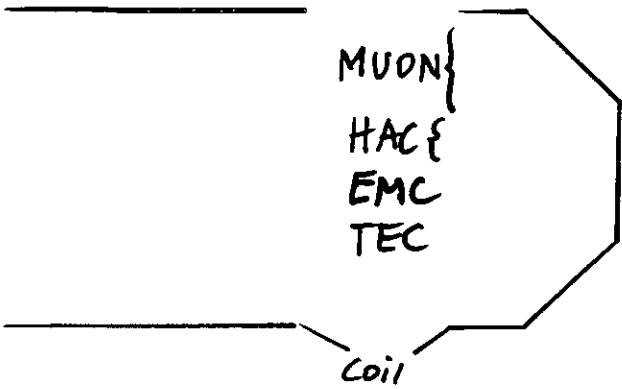
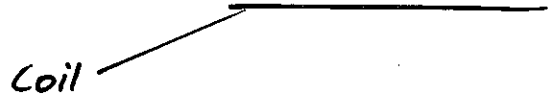


MUON  
HAC  
EMC  
TPC



MUON  
HAC  
EMC

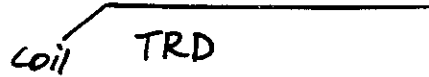
CTC



MUON

HAC

EMC

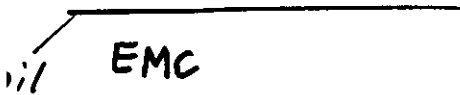


TRD

CTC

MUON

HAC



EMC

RICH

TPC

EMC  
DC  
RICH

CTC

COIL

L4: BCF develop  $e, \mu$  detection +  $\beta + p$  measm.

18 Nov 82      Conditional approval by RB

LOI  
60  
55  
53-79  
66

# LEP Experiments Committee: The first 400 days

- 24/25 March 1982    Presentation of Letters of Intent  
ALEPH, OPAL, L3, L4, ELECTRA, DELPHI, LOGIC  
Give proponents physics questions for evaluation of  
detector performance
- 18/19 May 1982     First discussion on how many detectors
- 15/16 June 1982    Discuss answers to physics questions and evaluate relative merits  
Consensus: no more than four experiments
- 13/14 July 1982    (ALEPH, ELECTRA, OPAL) (DELPHI, LOGIC, L3)  
First indication: ALEPH, OPAL, DELPHI, L3  
Narrow decision against ELECTRA
- 7/8 Sept 1982      Reaffirm previous conclusion  
Ask for modifications/ reductions in size/ cost of detectors
- 19/20 Oct 1982     Identify technically difficult components
- 16/17 Nov 1982     Final recommendations  
Guidelines for Technical Proposals    staging scenarios

- 1/2/3 June 1983    Evaluate Technical Proposals + define milestones  
Recommend for approval

		milestones
ALEPH	73 Msfr 261 physicists	<u>TPC90</u> , <u>EMCmin</u> , <u>EMCful</u> , <u>MC</u>
DELPHI	69 Msfr 269 physicists	<u>TPC</u> , <u>RICH3</u> , <u>RICHq</u> , <u>HPC</u> , <u>MC</u>
L3	99 Msfr 263 physicists	<u>TEC</u> , <u>BGO100</u> , <u>BGO+HAC</u> , <u>MC</u>
OPAL	73 Msfr 142 physicists	<u>CTCful</u> L, <u>ZCH</u> , <u>MC</u>

estim. avail. budget: 140 (MS) +50 (CERN) + 130 (NMS) = 320 Msfr

- 16 June 1983        Research Board approves the four experiments

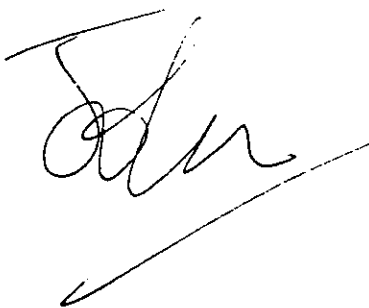





# PHYSICS AT LEP

Edited by  
John Ellis and Roberto Peccei

It's all your fault!

Volume 1

## Introduction

*J. Ellis and R. Peccei*

## Precision tests of the electroweak theory at the $Z^0$

*G. Altarelli et al.*

## Toponium physics at LEP

*W. Buchmüller et al.*

## New particles

*H. Baer et al.*

Volume 2

## Physics at LEP at high energies

*G. Barbiellini et al.*

## QCD, $\gamma\gamma$ , and heavy quark physics

*A. Ali et al.*