



CM-P00063848

24th May, 1962.

Summary of the discussion in  
the meetings of the Electronic Experiments  
Committee on 15th and 17th May, 1962.

Present:

- |            |               |              |
|------------|---------------|--------------|
|            | P. Preiswerk  | Chairman EEC |
|            | J. M. Cassels |              |
|            | C. Rubbia     |              |
|            | A. Wetherell  |              |
|            | D. Harting    | Secretary    |
| Part-time: | G. von Dardel |              |
|            | L. Dick       |              |
|            | B. D. Hyams   |              |

Distribution:

All physicists of the NP division.  
The members of the EEC.

- G. Bernardini
- L. Dick
- L. van Hove
- B. D. Hyams
- V. F. Weisskopf

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The Electronic Experiments Committee met on 15th and 17th May 1962 to discuss the future programme of counter experiments at the PS and at the SC.

A SC experimental programme

On the SC, the discussion was mainly limited to the consideration of a number of Letters of Intention that have been received.

It continues to be the policy of the EEC to discuss the SC experimental programme only in detail when serious difficulties can be expected. This is at present not the case.

A status report for the SC counter experiments on May 5th 1962 is attached to this summary.

B The PS programme for counter experiments

Period I

A status report for the PS counter experiments on May 5th, 1962 is attached to this summary.

Period II (16th April 1962 - 27th August 1962)

There are no new developments in the machine time allocations for period II. A summary of the present situation is attached. No definite decisions have as yet been taken on the pion form factor experiment ( $S_5$ ), because the results of the test run have not been completely evaluated, and on the charge exchange scattering experiment ( $S_{15}$ ), because it may well be incompatible with other experiments.

Period III (23rd October 1962 - 15th February 1963)

The NPRC expects to take the final decisions on the PS experimental programme for period III in its meeting of June 20th 1962. The EEC has decided to propose to the NPRC the following list of priorities for counter experiments, on which comments are invited. All counter experiments have been listed for which definite proposals have been received.

Notation:           a) first priority  
                      b) second priority  
         (test) full number of shifts requested will only  
                      be allocated after test runs have shown  
                      the experiment to be feasible.

Beam	Symbol	Name	Title	Recommended Priority
c <sub>3</sub>	C <sub>4</sub>	Taylor	p-p inelastic scattering	a
d <sub>9</sub>	S <sub>1</sub>	Jones	$\pi$ -p elastic scattering	a
	S <sub>5</sub>	Backenstoss	Pion form factor	Decision will be taken after result test run is known.
	C <sub>5</sub>	Taylor	$\pi$ -p diffraction scattering	Not in Period III
	S <sub>18</sub>	Weber	$\pi$ -p backward scattering	b(test)
	S <sub>9</sub>	von Dardel	Test of special relativity	Not accepted
q <sub>1</sub>	S <sub>17</sub>	Sens	Beta decay of $\Lambda$	a(test)
a <sub>2</sub>	L <sub>2</sub>	Lundby	Strange particle physics	a
	S <sub>11</sub>	Conversi	p $\bar{p}$ annihilation to electron pair	a(test) Time for production only when more than 35 shifts in beam a <sub>2</sub> are available in Period III.
o <sub>3</sub>	S <sub>14</sub>	Citron	Setting up of muon beam	Not decided

C Discussion on the general policy to be followed to arrive at an efficient future programme for PS counter experiments.

It was felt by Cassels and Preiswerk, that the efficiency of the experimental programme for PS counter experiments, in terms of scientific output, would be increased if the EEC, instead of acting only as a selection agency, would put slightly more emphasis on deliberate direction of the experimental programme.

At the PS an estimated average of 6 counter experiments can be done in a year. If these 6 experiments are randomly selected from different fields of high energy physics the chances of not making an appreciable contribution in any one of these fields are rather high. This is especially to be feared, because many of the experiments proposed are of a speculative nature, i.e. it cannot usually be guaranteed that they will yield a valuable result. This is inherent in the type of research done at PS.

Concentration of experimental effort on one, rather limited, field of research increases the chances that in that field at least results will be obtained, that are reasonably complete and consistent as to choice of energy etc.

It was decided on these grounds, that the EEC, in taking action on the future experimental programme, would try to adopt the following guiding principles.

1. Half of the machine time available for counter experiments will be allocated to experiments in one specific field of research, that will be chosen for a period of the order of one year.
2. The other half of the machine time will be allocated to the most attractive experiments selected from proposals concerning other fields of research.
3. For the selected field of research experimental proposals will be specifically invited by the EEC.

It was then decided to choose as selected field of research for the coming periods (1962 - 1963):

The measurement of differential cross sections for high energy elastic scattering.

The PS counter experiments for which definite proposals have been received can, in terms of these guiding principles, be classified at present in the following way.

	Selected field of research			Other experiments		
In running stage	C <sub>4</sub>	S <sub>1</sub>	C <sub>5</sub>		L <sub>2</sub>	
In testing stage				S <sub>5</sub>	S <sub>11</sub>	S <sub>14</sub>
Under discussion		S <sub>18</sub>			S <sub>17</sub>	

The terms "running stage" and "testing stage" do not actually mean that these experiments are running or are being tested, but only that the EEC feels that the preparations of and the discussions on the experiments have advanced to the stage that machine time either for production runs or for test runs should be allocated to these experiments as soon as possible.

According to the above arguments, three experiments in the left column and three in the right column can be accepted per year. This number takes into account parallel running.

It is the intention to have a general discussion, with all physicists involved, on the matters reported in the summary on Tuesday 5th June 1962 at 9.30 a.m. in the Main Auditorium.

Requested and allocated machine time for

PS counter experiments in Period II

Beam	Symbol	Name	Title	Shifts requested	Shifts allocated by NRC
c <sub>3</sub>	S <sub>8</sub>	Taylor	Deuteron production in p-p collisions	20	20
	N <sub>4</sub>	Taylor	$\pi^-$ -production at small angles	15	12+
d <sub>8</sub>	D <sub>6</sub>	v.Dardel	$\pi^0$ lifetime	12+4 p	15
d <sub>9</sub>	S <sub>2</sub>	Caldwell	Peripheral processes	30	20+ ?
	S <sub>5</sub>	Backenstoss	Pion form factor	15	?
	S <sub>14</sub>	Citron	$\mu^-$ -p scattering (tests)	10	10 p
a <sub>2</sub>	A <sub>2</sub>	(Lundby (Roberts)	Setting up of beam a <sub>2</sub>	15	15
	S <sub>11</sub>	Conversi	$\bar{p}$ -p annihilation to electron pair	30	10
	S <sub>7</sub>	Roberts	$\Sigma^- - \Lambda$ parity	30-40	25 p + 10
q <sub>1</sub>	S <sub>6</sub>	Cork	$\Sigma^- - \Lambda$ parity	50 p	30 p + 10
Neutral	S <sub>15</sub>	Wetherell	Charge exchange scattering	10 p	?

Remarks:

N<sub>4</sub> : Part of this experiment has been completed in Period I

STATUS OF ELECTRONICS EXPERIMENTS ON 5th MAY 1962 (SC)

			Shifts obtained Jan-May 1962
1) Citron	$\mu$ scattering in Carbon	Experiment completed	38 + 0 p
2) Rubbia	$\mu$ capture in Hydrogen	analysis continues (20% accuracy reached)	10
3) Farley	$\mu$ lifetime at rest	a new run is planned	24 + 4 p
4) Conversi	$\mu$ radiative capture	experiment completed	18
5) Heintze	search for $\pi^+ - \pi^0$ decay mode	experimental data taking and analysis is going on	64 + 54 p
6) Sens	capture of $\mu$ in $O^{16}$	equipment for preliminary runs ready	0
7) Dick	$e^+$ polarization	calibration check with positrons of $B^8$	60 + 18 p
8) Gorodetzky Muller Port Zichichi	muon depolarization in plastic scintillator as function of applied magnetic field (0-10 kilogauss)	some shifts have been allocated to this ex- periment	0

p means : as parasitic user.

STATUS OF PS COUNTER EXPERIMENTS ON 5 MAY 1962

- |                |                         |   |
|----------------|-------------------------|---|
| 1) Taylor      |                         | 3 shifts have been allocated for measurements of the total cross section for p-p and p-n interaction at momenta 3.3 4.5 5.8 7.8 and 18.8 GeV/c. When the Glauber correction is applied, there is no detectable difference between the p-p and the p-n cross sections. |
|                | $N_4$                   | Measurements were made of the negative particle production by 19 GeV/c proton on the Be and Pb in the range $\frac{1}{2}$ to 8 GeV/c and at angles of 0, 25, 50, 100 and 125 mrad.  |
| 2) Backenstoss | Pion form factor        | Calibration of a total absorption detector. Photon production between $0^\circ$ and $3^\circ$ Lab by 8 GeV/c pions in $H_2$ and C measured.   |
|                | $S_5$                   |   |
| 3) von Dardel  | $\pi^0$ Lifetime        | preparing the new run.  |
|                | $D_6$                   |   |
| 4) Harting     | Diboson production      | Analysis of the events of the preliminary run. Preparation of equipment for improved experiment.  |
|                | $S_2$                   |   |
| 5) Lundby      | $A_2$ Beam              | $A_2$ is being built, preparation of equipment.   |
|                | $A_2, L_2$              |   |
| 6) Fidecaro    | $\Sigma \Lambda$ parity | 30 000 pictures to measure $\Sigma^0$ polarization and 30 000 pictures for a preliminary investigation of the $\Sigma^- \Lambda$ parity are being analyzed.   |
|                | $S_6$                   |   |



- 7) Roberts  $\Sigma - \Lambda$  parity  
S<sub>7</sub> 100 000 pictures have been taken  
for the  $\Sigma^0$  polarization measure-  
ments and are being analyzed.
- 8) Conversi p-p annihilation  
S<sub>11</sub> to electron pair Test of Equipment.
- 9) Citron  $\mu$ -p scattering  
S<sub>14</sub> Main effort was devoted to the study  
of various possibilities to extract  
a high flux of  $\bar{\pi}$ -mesons from target  
in the East Area.
- 10) Sens Beta decay of the  $\Lambda$   
S<sub>17</sub> Construction of equipment.