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ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLÉAIRE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

SCIENTIFIC POLICY COMMITTEE

Nineteenth Meeting

Geneva - 29 April, 1961

LONG-TERM ACCELERATOR PROGRAMMES FOR CERN

(Paper by the Director-General)

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The two papers (CERN/SPC/125 and CERN/SPC/126) give a review of possible future accelerator programmes for CERN and a specific proposal for a programme for the CERN proton synchrotron (CERN PS). The arguments for proposing a future CERN PS programme are given in relation to the likely development of high energy physics in the world and the part that CERN could play in this development.

Although it could be argued that this proposal is a logical extension of the facilities of the Laboratory, it is likely that the Member States, in view of its cost and of the extra staff required, will regard it as outside the old agreed programme and therefore as part of a new programme for the Organization.

The proposal made is to extend the experimental facilities of the CERN PS by the addition of two storage rings and by modifications to the CERN PS to enable particles other than protons, e.g. electrons, deuterons and heavier ions to be accelerated in the machine and subsequently accumulated in the storage rings, thus making available many interactions between different particles with energies ranging from 10 GeV in the centre of mass system for e-e interactions to 50 GeV in the centre of mass system for p-p interactions. It is argued that such an extension of the CERN PS experimental facilities, costing about twice the final budget of the CERN PS, is more flexible and advantageous from the physics point of view than building a new accelerator which, if it was aimed at accelerating protons to 300 GeV, would cost at least five times the CERN PS.

Whether it is better to extend the experimental facilities of the CERN PS in the manner here proposed or to build a new accelerator is clearly a matter of physics judgement and, inevitably, of opinion. Also, there are practical problems involved. Whereas storage rings could be added to the CERN PS by an addition to the existing site of the Laboratory, a new accelerator, for example a 300 GeV PS, would mean finding a new site, probably far from Switzerland, suitable for such a large machine and there starting a new laboratory.

If Europe wants to maintain its present position in high energy physics research in the world and offer facilities to its physicists in the next decade comparable with those likely to be available in the USA and USSR, then either an extension to the present CERN PS facilities or a new accelerator seem an inevitable commitment for CERN. Only an agreed world-wide slowing down of effort in this research field, in Europe, USA and USSR, could avoid such a commitment and all the present indications are in the reverse direction: for example, the decision of the USA President's Scientific Advisory Committee that USA annual expenditure on high energy physics should be increased by a factor of four over the present level by 1970 (\$ 400 M instead of \$ 100 M).

The Scientific Policy Committee are asked:

- a) to approve that CERN should engage in a new accelerator programme aimed at providing more facilities for the Laboratory by 1970 or before;
- b) to consider whether the new programme should be an extension of the experimental facilities of the CERN PS by the addition of storage rings or whether a new very high energy accelerator is preferred;
- c) if the choice is for storage rings, then the Scientific Policy Committee are asked to approve that the time scale of this new programme should be that given in the papers and, particularly, that in 1962 a design team of about 10 staff should engage themselves in producing the final plans of the new programme for approval by the CERN Council and its Committees in 1962. The consequent financial commitment is given in the schedule for the new programme. If on the other hand the Scientific Policy Committee feel that a new large accelerator is preferable, then the programme, including the setting up of a design team in 1962, will be similar and the Scientific Policy Committee are asked to give approval for this programme.

If the Scientific Policy Committee give approval to the points a), b) and c) above, including their preference, it is intended to ask approval of the CERN Council in December, 1961, to points a) and c). Also in June, 1962, it is further intended to ask the Council for approval to proceed with the full project and in December, 1962, to ask for approval of the final plans with the consequent financial commitments.
