# COMPUTER

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This draft should be considered as a first attempt to list various possibilities and future tasks of the computer.

## Linac

The computerized acquisition and control system will be expanded and may help in the installation of the new LCP. No special tasks are foreseen for the near future.

## Linac - Booster line

An experiment is being prepared (Sherwood) in order to test the feasibility of computer monitoring on the injection line. Anyway, the computer will be useful for data acquisition, treatment and presentation of

a)  Energy - energy spread
b)  Emittance - profile
c)  Position.

The use of the computer will reduce the hardware costs and make operation easier. The tasks may be performed on request. The computer can normalize pick-up signals and even display the position each pulse.

## Booster

The use of the computer will be discussed with each group later.

## Transfer Booster - PS

Same tasks as Linac - Booster.

## PS Operation

Besides expansion of already existing programs and optimization trials, some new tasks may be assigned to the computer

## Radial Beam Position   (Hardware 4 man-months + software 0.5 man-months)

The use of the computer may reduce greatly the cost of the hardware. Digital displays may be driven each cycle.   In case of no computer, it is possible to use a read-out and tables.

## Efficiency and Ratiometer   (Hardware 1 man-month + software 0.5 man-months)

As this information is already sent to the computer it will be necessary to add only a computer-driven display.   The development of such devices should be stopped.

## IBS   (Hardware 3 man-months + software 0.5 man-months)

The computer can display a digital information giving the width of the beam and maybe the position.   Quantitave data are needed.

The three above-mentioned tasks could fit with our existing system.

## Function Generation   (Hardware 6 man-months + software 6 man-months)

It seems that many function gnerators may be in use in the future. For example:

    Frequency program
    Stable phase of the RF
    RF voltage
    Radial steering of the beam
    PFW's.

There are basically two possibilities:

    a)  to build special hardware for each purpose with access to some set points by the computer

    b)  to achieve these functions through a computer.

We can expect that solution b) will appear more flexible and cheaper. It could be possibile to do it in the IBM 1800 but that will lead to a very rigid system freezing a lot of new applications. It looks quite attractive to acquire a second, small computer linked with the 1800 to achieve I/0 only.

    <u>This kind of task should be foreseen for the booster also.</u>

<u>Transfer PS - ISR</u> (Hardware 2 man-months + software 1 man-month)

The computer will act as a gate to allow ejection towards ISR. The beam properties will be checked by the computer and bad pulses will be rejected. The details of this operation have to be studied but no fundamental difficulties appear. This task will be performed with an absolute priority during transfer period.

<u>WH and Switchyard</u>

The computer (or another one) can achieve beam and power supplies monitoring and some optimizations.

As a general remark, valid for all, it appears interesting to study in detail the effect of using the computer on power supplies. The question to answer is the following:

    "What is the cost reduction if long-term stability is not required for power supplies?"

We can consider no extra cost on the hardware if it is already agreed to have computer acquisition and control.

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