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AN EXPERIMENT ON PROTON RADIOGRAPHY AT THE PROTON SYNCHROTRON

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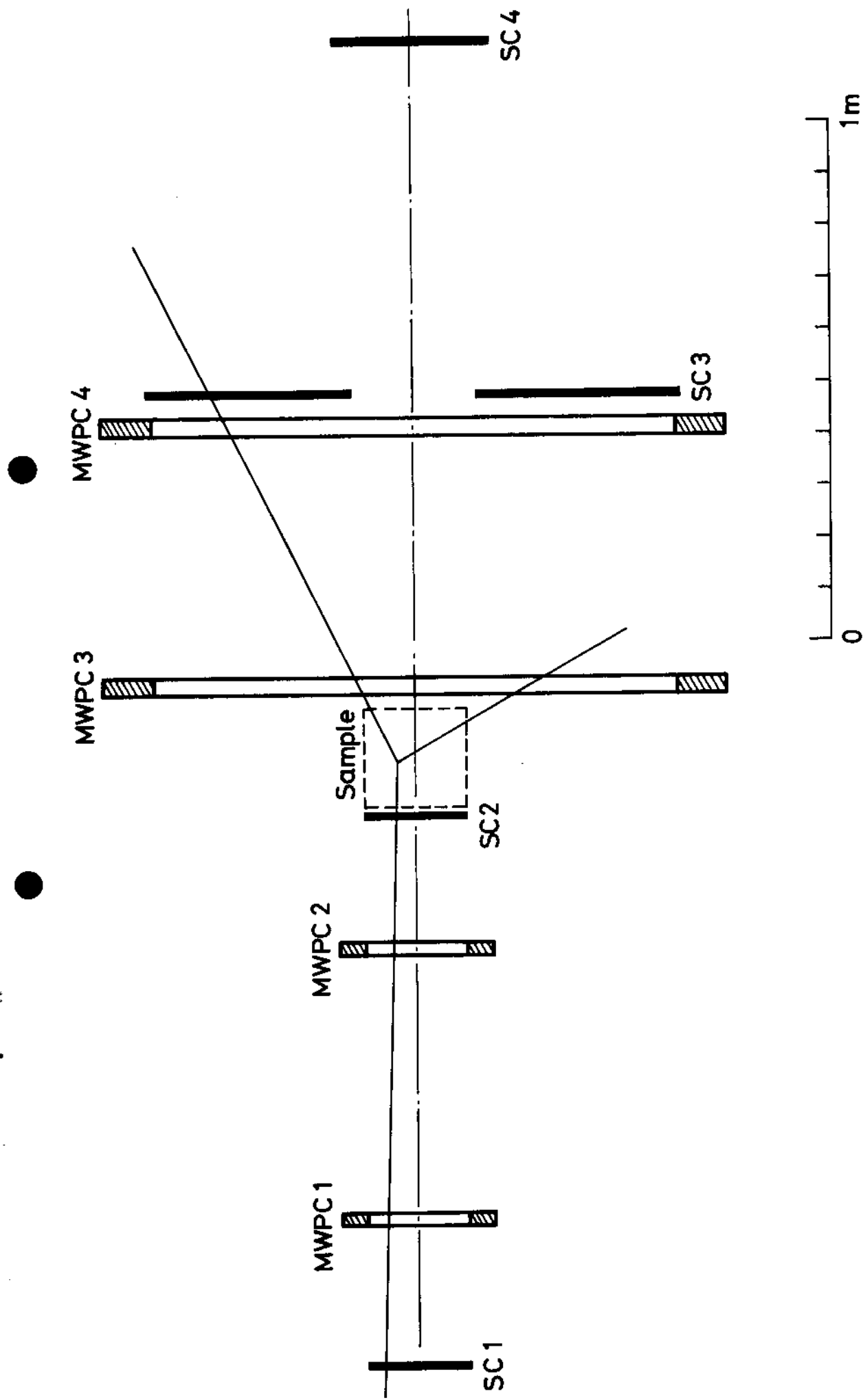


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Preliminary tests have shown the possibility of obtaining complete three-dimensional radiographies of sample materials and animal tissues using the nuclear scattering of 1 GeV protons. A system has been developed to collect and analyse around 10^4 scatters per burst, thus allowing "in vivo" tomographic studies of living animals. The aim of the proposed experiment is to analyse the possibilities of the method and its advantages against the conventional X-ray computer assisted scanners. At the same time, experience will be gained in fast data acquisition systems and on line data reduction and analysis.

The beam requirements are : a few 10^5 protons/burst, at energies around 1 GeV, with any large momentum bite and a size around $10 \times 10 \text{ cm}^2$. A pion contamination up to 50% can be tolerated. The expected running time is around 6 months of normal operation.



Experimental setup