

STORAGE RING STUDY PAPER #2

M. S. Livingston

August 14, 1968

This study proposes a storage ring system using two nearly tangent rings which are overlapped so they cross at two interaction regions spaced about 160 meters apart and at a crossing angle of 11.25 deg. It follows the concepts and general layout presented in Study Paper #1, FN-162, July 2, 1968. It is modified to an orbit circumference for each ring of $1/3$ that of the main ring, and it utilizes the triplet separated-function lattice with momentum matching at the interaction regions described by A. A. Garren in his study memo of August 6, 1968.

Two alternate arrangements of the interaction regions are possible with the rest of the rings being undisturbed. The first arrangement provides the two interaction regions spaced 160 meters apart and with a crossing angle of 11.25 deg. The second arrangement provides parallel beams spaced about 1 meter apart which can be used for 0 deg interaction over a total distance of up to 100 meters, or the beams can be deflected to form two intersection points spaced 50 meters apart and with crossing angles of 1 deg to 2 deg as desired. This second arrangement offers advantages for the study of very small angle and small momentum-change interactions. The two arrangements are illustrated in Fig. 1.

The location of the dual-ring system relative to the main ring,
and the injection trajectories are shown in Fig. 2.

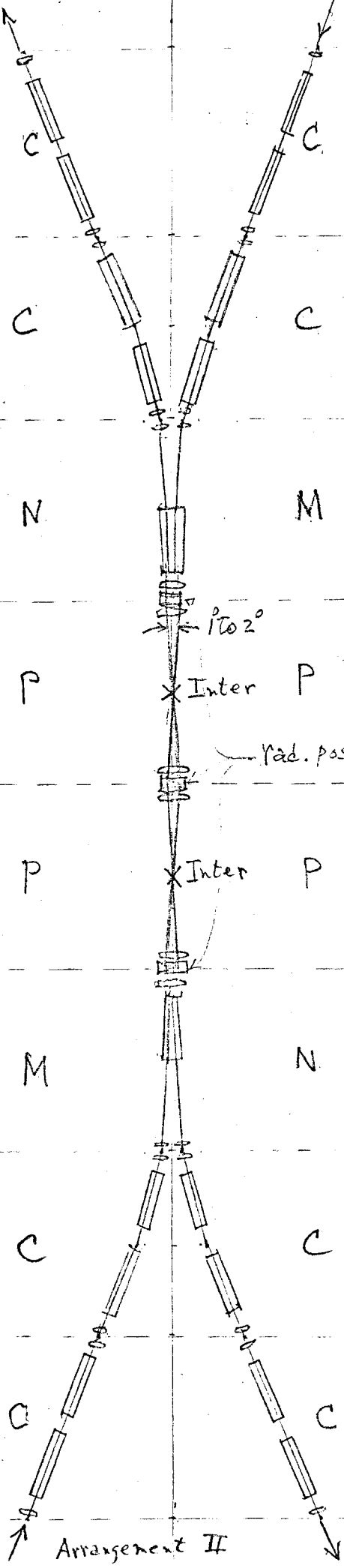
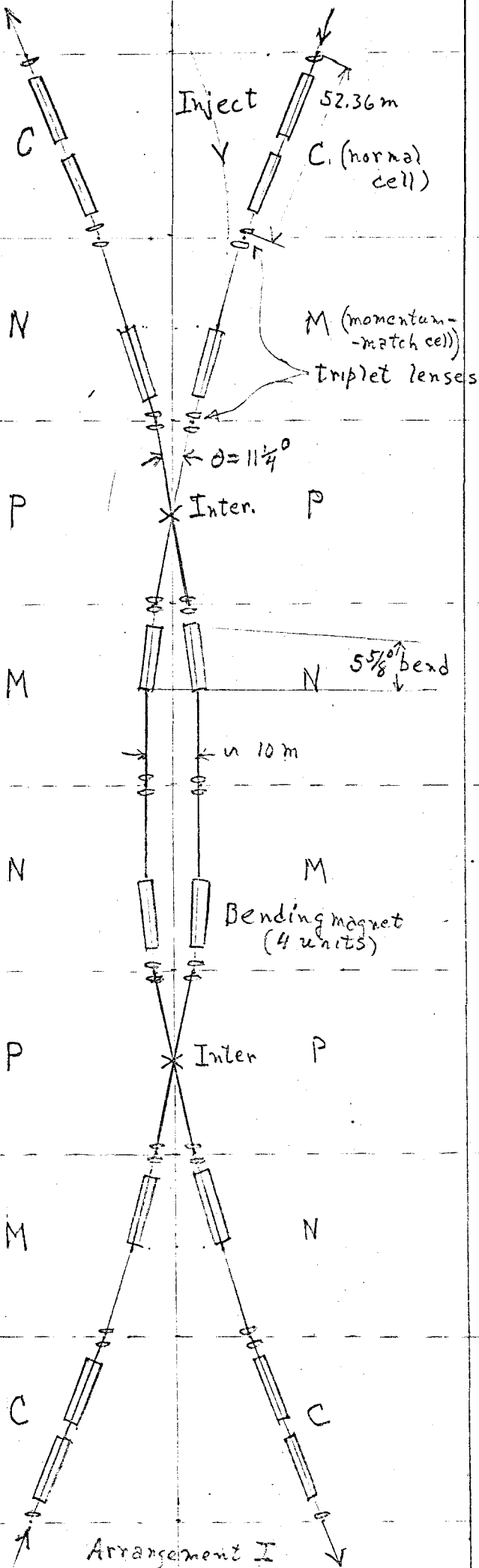


Fig. 1.

Arrangement I

Arrangement II

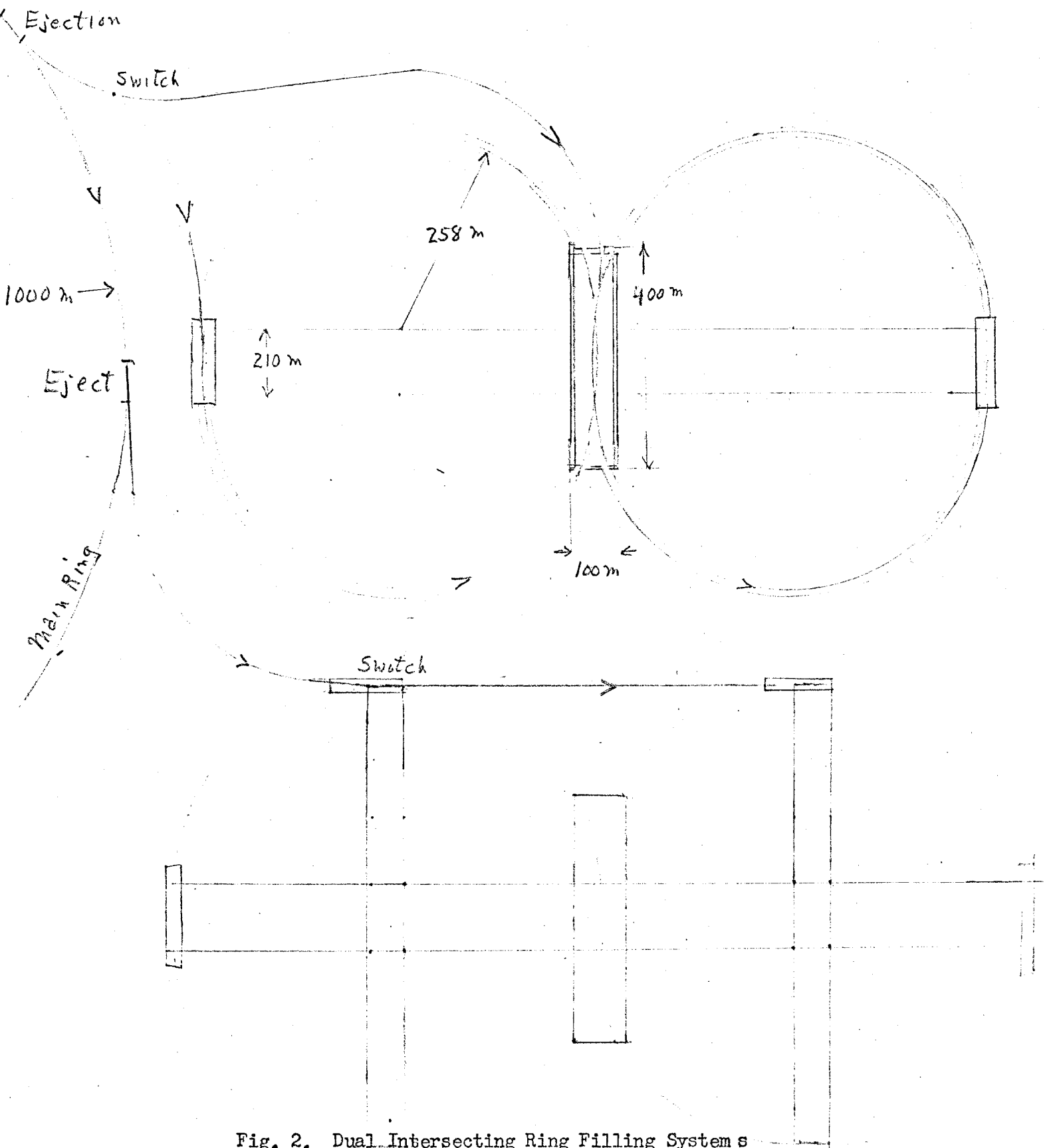


Fig. 2. Dual Intersecting Ring Filling Systems