



23 September 1971

CM-P00063363

## INTERSECTING STORAGE RING COMMITTEE

LETTER OF INTENT

To : Members of the ISRC

From : W.W. Ash, M. Cavalli-Sforza, D. Coyne, G. Goggi,  
G.K. O'Neill and D. Scannicchio

Subject: Study of the process  $pp \rightarrow N^* N^* \rightarrow (p\pi^+\pi^-)(p\pi^+\pi^-)$  using  
the SFM facility

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This letter of intent answers a general request made by the ISRC in regard to the SFM facility. The Pavia-Princeton group would like to study the double isobar process at the ISR, using the SFM and its detectors without modifications or additions.

Our interest in double-isobar reactions was first expressed in a note NP/434 (22 August 1969). In that note we pointed out that the double-isobar process offers what may be a unique way to explore the very-low- $|t|$  region in a full reconstruction ISR experiment. In fact, whereas most other experiments are limited to minimum transverse momentum transfers of the order of 60 to 200 MeV/c, by the necessity for extracting a proton from the vacuum pipe, all reaction

products from certain double-isobar decay modes can be extracted even in zero transverse momentum events and for  $|t|$  values as low as  $5 \cdot 10^{-4} (\text{GeV}/c)^2$ .

There are about six-isobar decay modes which are reasonably accessible technically at the ISR. We intend to concentrate on the easiest candidate, which is

$$p + p \rightarrow N^* + N^* \rightarrow (p \pi^+ \pi^-) + (p \pi^+ \pi^-)$$

A fair fraction of all events of this type will have 4-constraint fits in reconstruction.

We do not need neutron detectors for the easiest double-isobar decay mode, but would extend the experiment to include the mode

$$p + p \rightarrow N^* + N^* \rightarrow (p \pi^+ \pi^-) + (n \pi^+)$$

if there is interest on the part of members of the CHOV collaboration in collaborating on the work and in contributing their neutron detectors, after completion of the CHOV experiment on the single-isobar process.

Other two physicist of the Pavia group (G.C.Mantovani and A.Piazzoli) are interested in participating to this experiment.

Our contact representative for our proposal is Dr.D.Scannicchio, Pavia University.