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PROPOSAL FOR AN EMULSION EXPERIMENT:
SEPARATION OF Ξ^- PARTICLES BY MEANS OF A PULSED MAGNETIC FIELD

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More precise details about the proposed experiment can be given now:

1. Beam. The most suitable beam is the m_{4b}-beam; it yields 3.5×10^4 separated K^- of 1.8 GeV/c (from 7×10^{11} circulating protons at 19.2 GeV). The image size is 1 cm^2; separation is 6 π^- per 1 K^- (with a second separator a ratio 1:1 could be obtained). Since our two magnetic coils can stand some 6×10^3 pulses at 200 KGauss, we can get 2×10^8 K^- on the target.

2. Geometry. The distance between the target and the emulsion will be chosen at 2 cm (instead of 1.3 cm in the original proposal).

3. Scanning criteria and background. Using data for Ξ^- production from the Heavy Liquid Bubble Chamber one can fix the scanning region: all tracks with a grain density $g^* \geq 3.5$ and an incident angle between 45° and 70° will be followed.
   This scanning region will be completely free from $\pi^\pm$ and K^-. Protons can enter the scanning region if they have a momentum between 280 and 470 MeV/c and if they are emitted in the angular interval between 65° and 85°.
   The proton tracks (and the few Σ^+ and K^+ tracks) can be discarded after a few mm by determining the sign of the particle from the curvature; about 20% of the tracks will leave the plate in which they have been picked up after a distance too short for determination of the sign; they have to be followed to the next plate.

Particles of negative sign will be followed to the end of their ranges. The average number of plates to be followed through is 2.9 for Ξ^-.
The only negatively charged particle besides the Ξ^- in the scanning region is the Σ^-. The number of Σ^- will not be higher than the number of Ξ^- (the production cross sections are about equal at a K^- momentum of 1.8 GeV/c).

4. Production rate. For 1.2×10^6 K^- incident on the target, 1 Ξ^- stopping in the emulsion within the scanning region is expected (assuming: effective target length 3 cm; azimuth angle $1/6 \times 2\pi$; 1.6×10^{-3} Ξ^- per K^- reaction; 15% of the Ξ^- in the scanning region; 5.7% of these not decaying).
For 2×10^8 K^- one will get therefore 160 Ξ^- capture events.