Fermilab Proposal No.
462

SEARCH FOR SHORT LIVED PARTICLES PRODUCED BY 300 GeV PROTONS IN EMULSIONS

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It is proposed to continue the search for short-lived particles with lifetimes in the range of $10^{-12} - 10^{-14}$ sec., using 400 GeV protons in emulsion nuclei. As in the experiment No.419, the signal would be a neutral or charged decay close to the primary proton-nucleus interaction.

We request the exposure of one stack of Ilford G5 emulsions, of 80 plates of $5 \times 10 \times 0.06$ cm^3, to 400 GeV protons with a density of $\simeq 3 \times 10^4$ protons/cm^2, with a total exposure of 1.2×10^6 incident protons over an area of 5×8 cm^2.

The experiment should be sensitive to the production of new particles if they have a mass of 1 - 10 GeV and if their production cross section is larger than 1 μb.

More details can be found in the similar experiment at 300 GeV (No.419).