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## Recent Work

**Title**

SUMMARY OF THE RESEARCH PROGRESS MEETING OF JULY 19, 1951

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Bonnie E. Cushman

September 12, 1951

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Bonnie E. Cushman

Radiation Laboratory, Department of Physics  
University of California, Berkeley, California

September 12, 1951

I. Photo Mesons from Helium. Mark Jackobsen.

The final results of the experiments on the production of mesons from helium were given. The mesons were collimated by a uranium collimating system and detected by C-2 200 micron emulsions and stilbene crystals (see Fig. 1).  $\pi^-$  to  $\pi^+$  ratios were obtained at 3 different angles with an overall value of  $0.97 \pm 0.08$ . The results indicate that meson production is independent of angles and energy. The details of the experiment and the final results are given in full in UCRL-1317.

II. Neutron Deficient Isotopes in the Region of Radium. Floyd Momyer.

Isotopes of Ra, Fr, and Em, with 126 neutrons have been studied. The isotopes were produced by the spallation of thorium irradiated in the 184-inch cyclotron. The desired elements are separated out and their decay followed with an alpha counter and spectrometer. The decay schemes are given in Fig. 2.  $Em^{212*}$  has been the only previously known isotope of element 86. The new  $Em^{209}$  with only 123 neutrons has a half-life of 33 minutes and an alpha time of approximately 10 hours. The  $Em^{211}$  samples seemed to be contaminated with  $Em^{210}$ , but it is hoped to get pure isotopes by using the carbon beam from the 60-inch cyclotron on lead using the reaction  $Pb^{208}(C^{12} > 3n)Ra^{217}$ . The radium isotopes would have to have the stable structure of 126 neutrons.

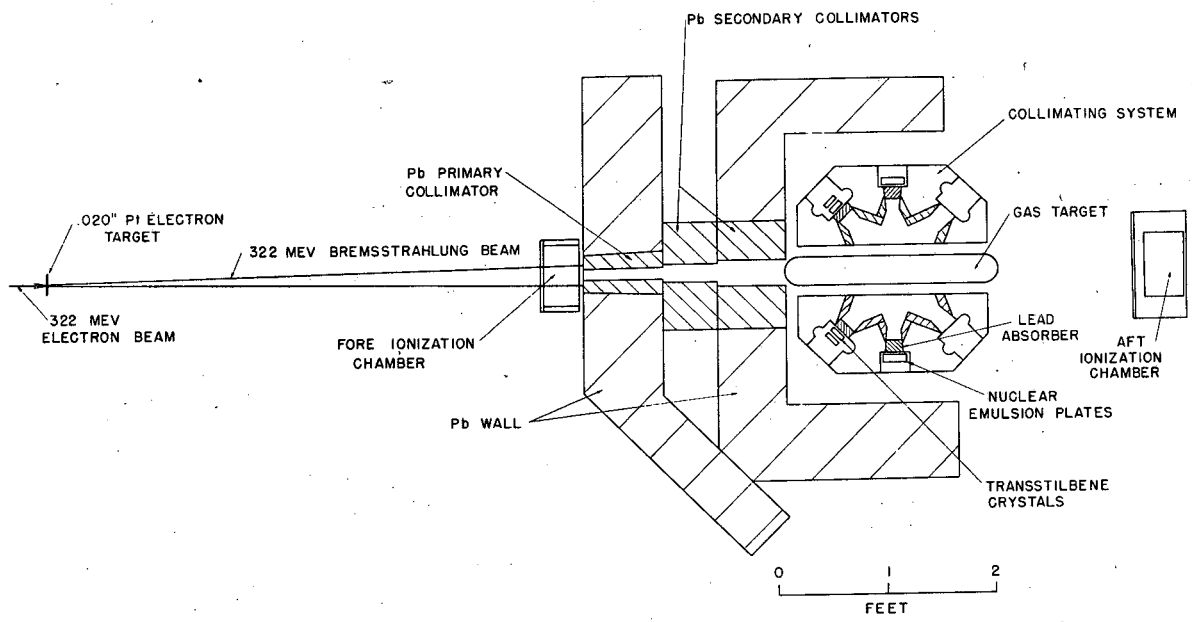


Fig. 1

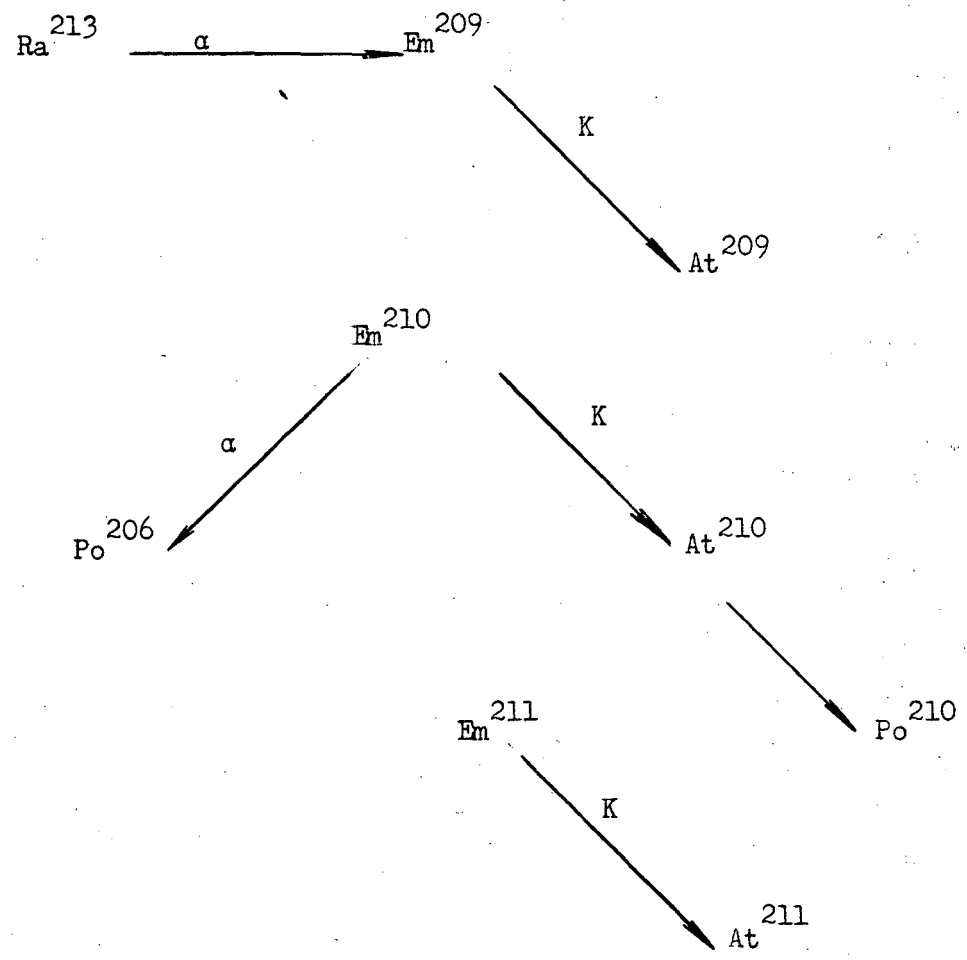


Fig. 2