Bob's Evolution from Particle Physics to Accelerator Physics

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A POLARIZED PHOTON BEAM PRODUCED BY COHERENT PAIR PRODUCTION IN ORIENTED GRAPHITE*

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Attenuation by coherent pair production in highly oriented, compression annealed, pyrolytic graphite has been used to polarize a 16-GeV bremsstrahlung beam. The polarizer consists of 61 cm of graphite crystals, whose reciprocal lattice vectors are oriented at 10.5 mrad to the normal to the beam direction, and can be rotated by 90° about the beam line to rotate the plane of polarization. A functionally identical assembly of length 30.5 cm was used as an analyzer to measure the polarization of the beam with the SLAC pair spectrometer. The beam produced intensities greater than 4×10^8 equivalent quanta per beam pulse and had a measured polarization of 0.255 ± 0.020.

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Study of charged-pseudoscalar-meson photoproduction from hydrogen and deuterium with 16-GeV linearly polarized photons

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The asymmetries in forward π-N, π-Δ, and K^+-$(\Lambda + \Sigma)$ photoproduction have been measured with a 16-GeV linearly polarized beam. The experimental method and the procedures for extracting cross sections and asymmetries from the data are discussed in detail. Information on the energy and momentum-transfer dependence of cross sections for natural- and unnatural-parity exchange, interference between exchanges of opposite G parity, and vector-meson dominance is obtained and discussed.

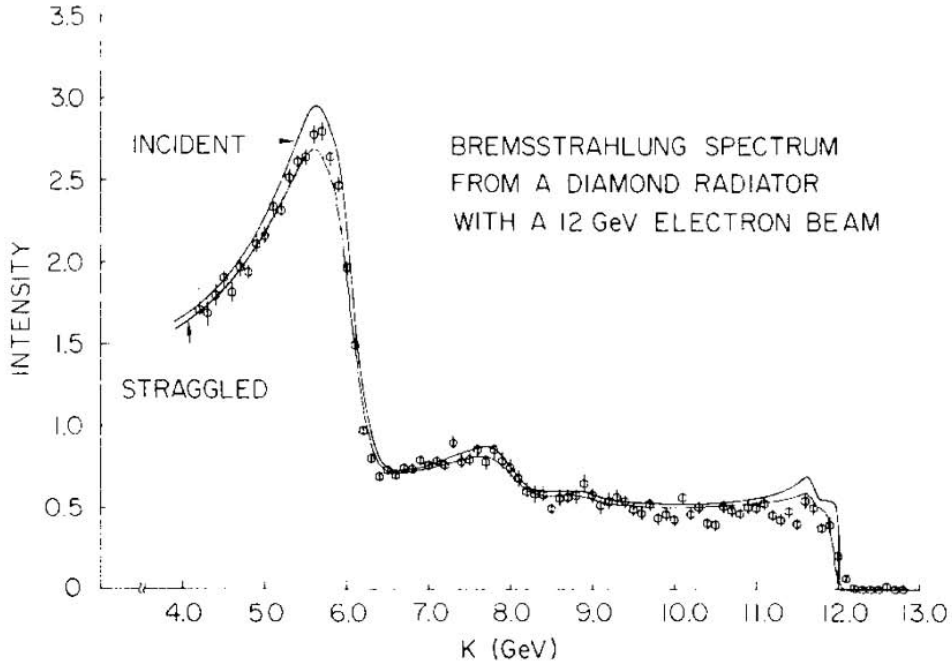

Fig. 1. A measured coherent bremsstrahlung spectrum from a diamond radiator. See ref. 4 for an explanation of the curves.