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SUMMARYINVESTIGATION OF SOFT PHOTON PRODUCTION IN HADRONIC COLLISIONSUSING THE OMEGA SPECTROMETER

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The Omega Spectrometer, with a hydrogen target and two electromagnetic calorimeters, is used to investigate the anomalous production of soft gammas in hadronic collisions. The experiment is aimed at confirming an observation made in BEBC: the yield of soft gammas (70% of the gammas have c.m. energies in the range $(20 < E(\gamma) < 60 \text{ MeV})$) exceeds the QED prediction of hadronic bremsstrahlung by a factor of 3. This effect may be related to the anomalous production of low mass lepton pairs (virtual gammas) observed in several hadronic experiments.

An interaction trigger is used to collect events of $\pi^{\pm} p$ collisions (and $K^{\pm} p$ tagged by Cedars in the beam) at 280 GeV/c. The charged tracks are recorded by the Ω spectrometer, the γ 's in the two calorimeters. The γ 's arising from hadronic radiative decay (mostly π^0 's) are reconstructed, and subtracted event by event. The remaining γ spectrum is studied, in a region of phase space where the background (e.g. bachelor γ 's from uncompletely reconstructed π^0 decays) is minimal, as function of the quark content of the incident particle, and of the properties of the event (charged and neutral multiplicity, rapidity distribution, etc.).

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