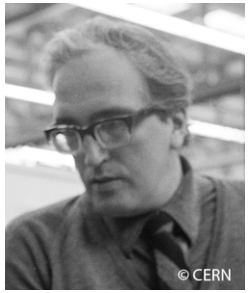
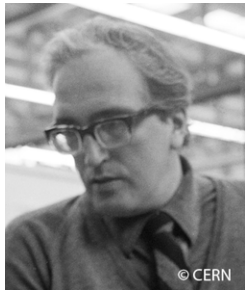


Giordano Diambrini Palazzi

Ricordo dell'attività a Frascati e agli ISR

Il nucleo iniziale



Bremsstrahlung e Pair production su cristallo

REVIEWS OF MODERN PHYSICS VOLUME 40, NUMBER 3 JULY 1968

High-Energy Bremsstrahlung and Electron Pair Production in Thin Crystals

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Istituto di Fisica dell' Università di Genova and *Istituto Nazionale di Fisica Nucleare, Genova, Italy*

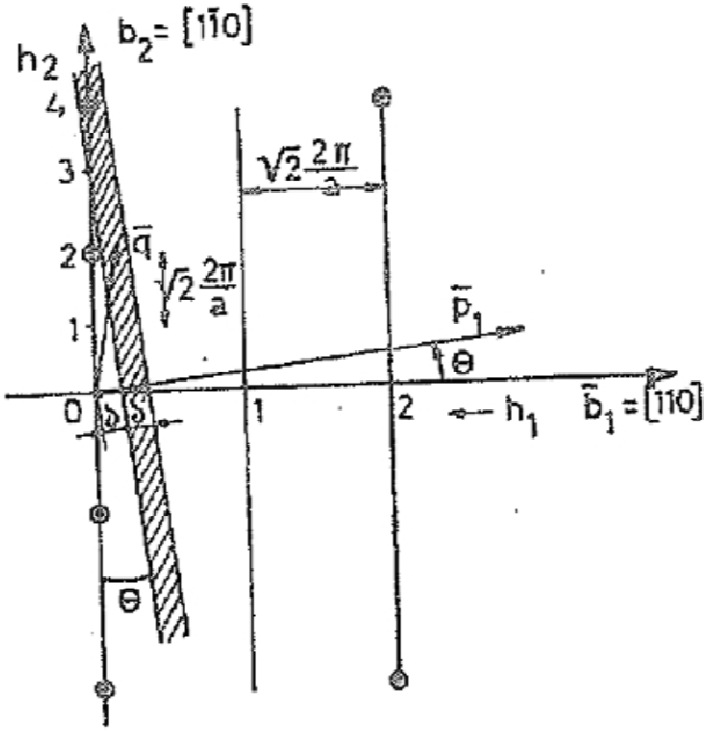
A survey of theoretical and experimental methods now available for calculating, producing, and measuring high-energy coherent bremsstrahlung (HEB) and electron pair production (EPP) is presented.

After an introduction in which the historical development of the subject matter is sketched, a preliminary theoretical approach is outlined. A rough classical argument is shown, and a formal expression of the Laue–Bragg law suitable for the next calculation is deduced, together with some fundamental kinematics of the HEB and EPP processes. The structure factors for the cubic, face-centered cubic, and diamond lattice are deduced and some qualitative features of the interferential cross sections are shown.

A complete calculation of the HEB and EPP cross sections is carried out. HEB polarized and unpolarized cross sections as functions of recoil momentum are obtained and then integrated over all the reciprocal lattice space. Corresponding results for EPP cross sections are expressed and numerical calculation results are shown.

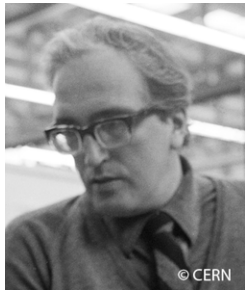
The last part of the paper deals with experimental methods and techniques used in different laboratories in order to produce and measure high-energy coherent bremsstrahlung suitable for photoproduction experiments by polarized photons. Experimental apparatus and results are described in some detail. Finally, concluding remarks are made concerning the topics omitted.

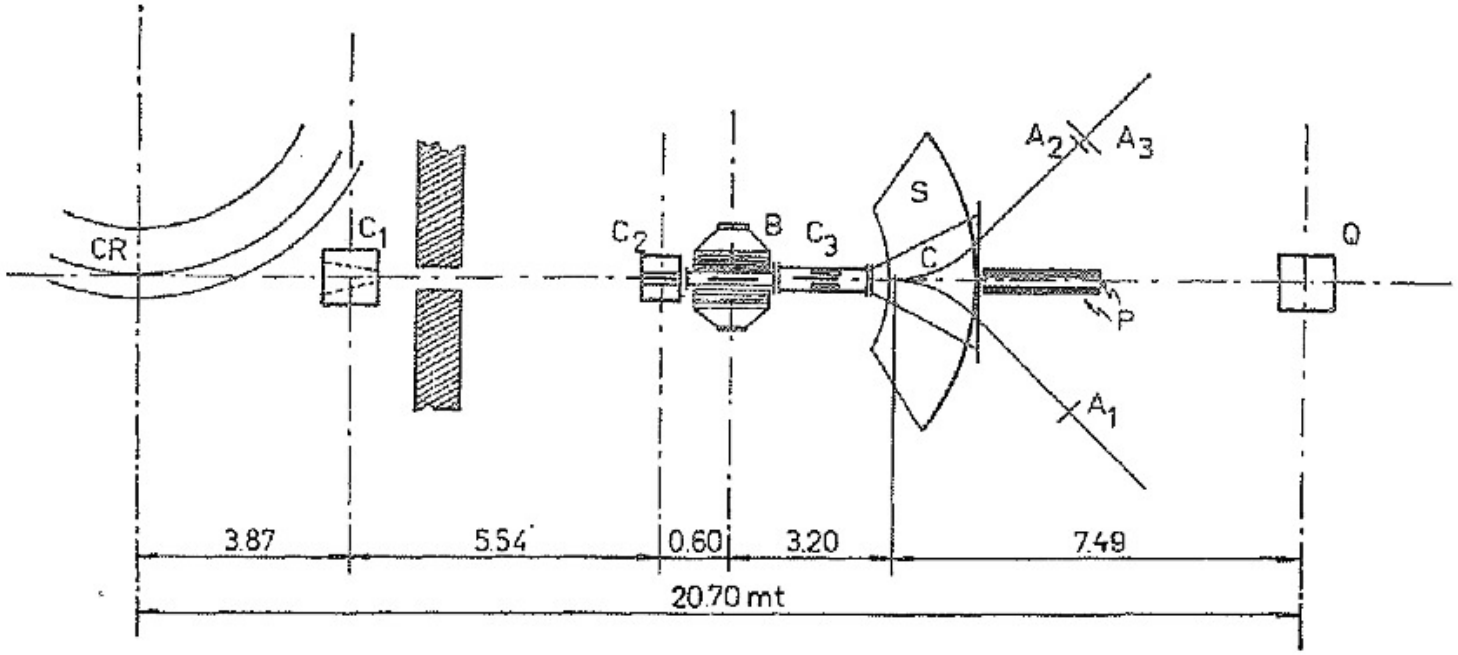
Bremsstrahlung e Pair production su cristallo



Reciprocal lattice in the incidence plane
with the intersection of the recoil momentum space

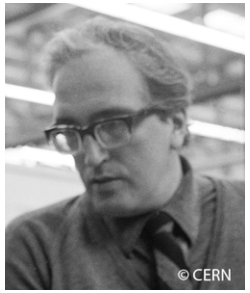
Lo spettrometro a coppie

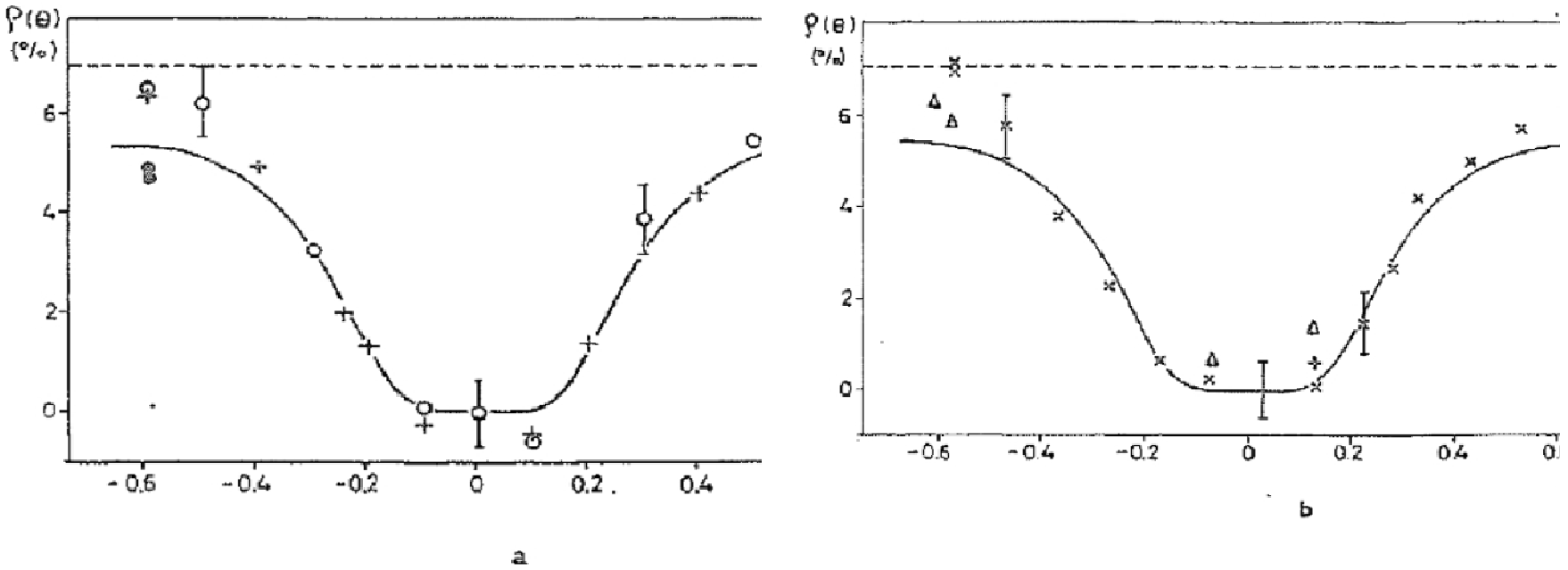




Experimental Setup for coherent Bremsstrahlung and Pair production measurements

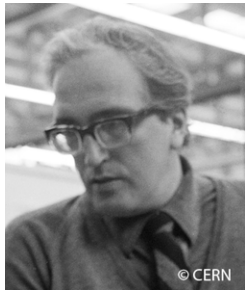
Produzione di coppie. I primi risultati

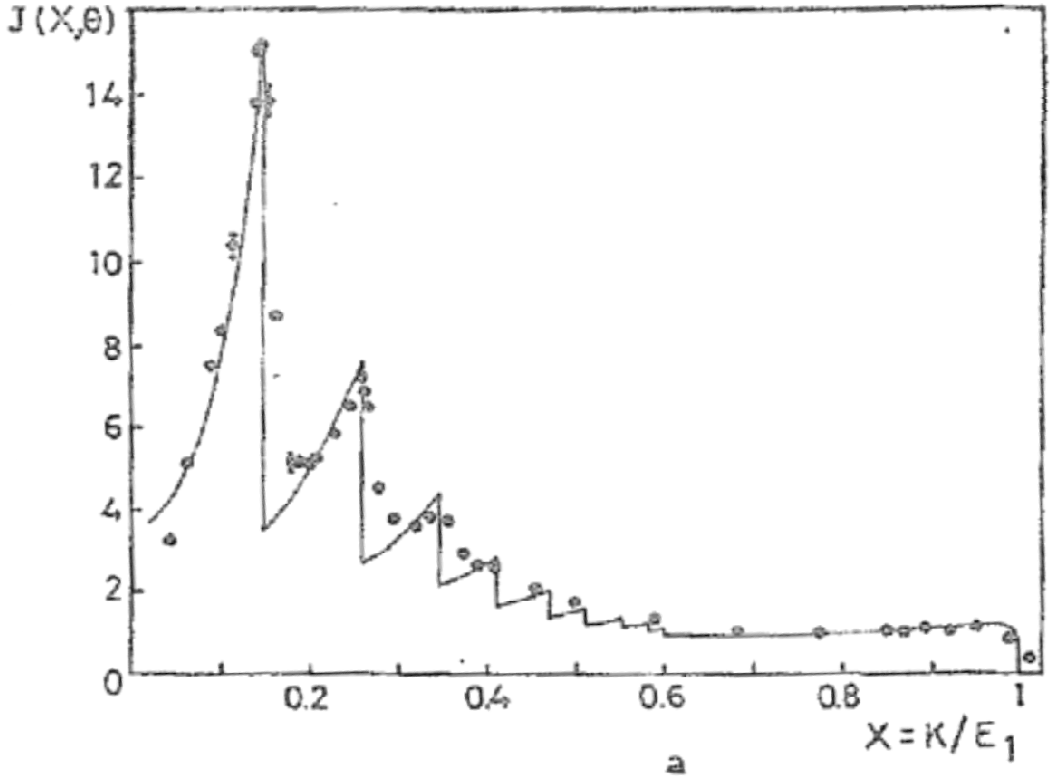




Electron pair production cross section in silicon single crystal (horizontal and vertical axes)

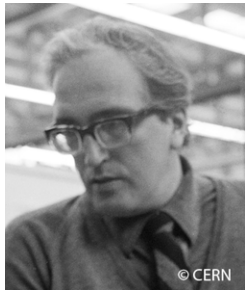
Bremsstrahlung su diamante

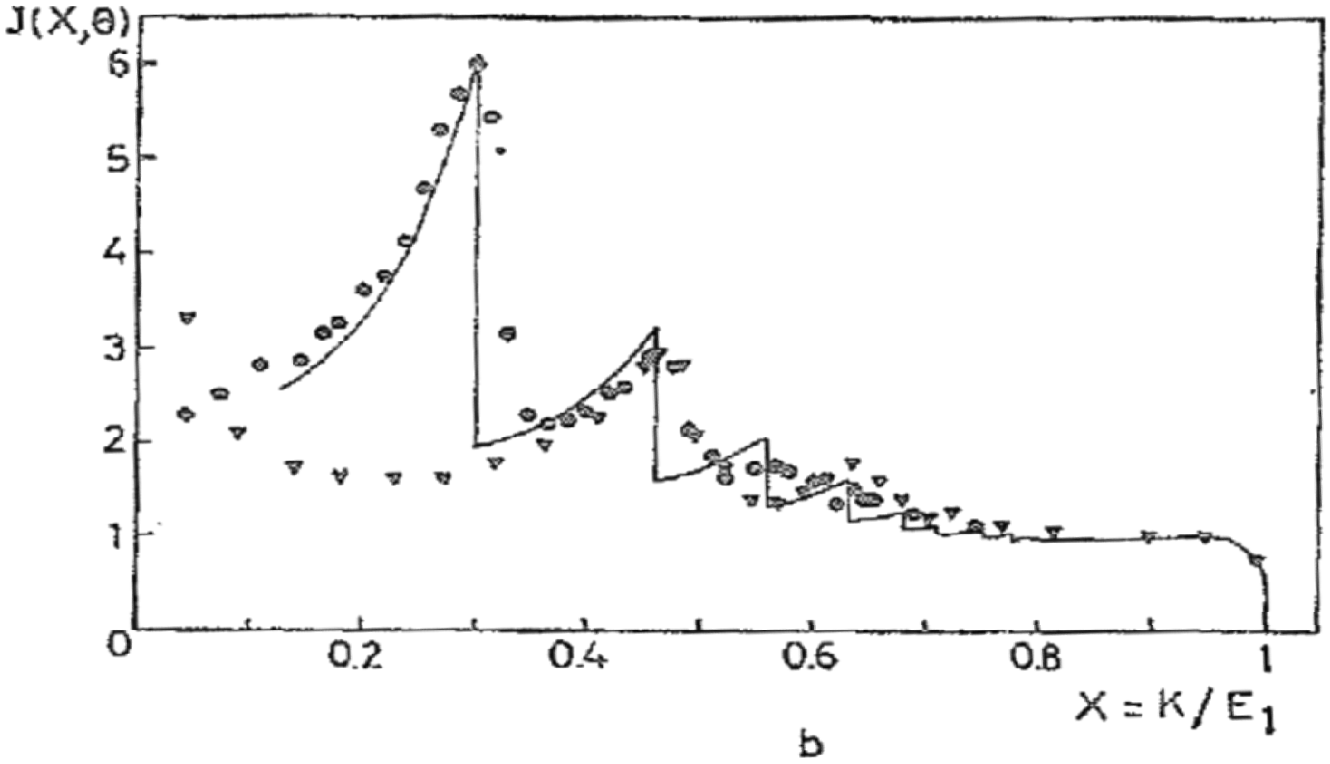




Bremsstrahlung spectrum by electrons of 1 GeV in diamond crystal

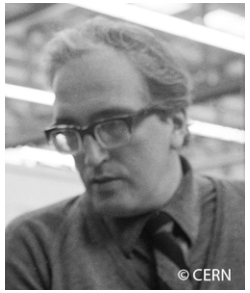
Bremsstrahlung su diamante

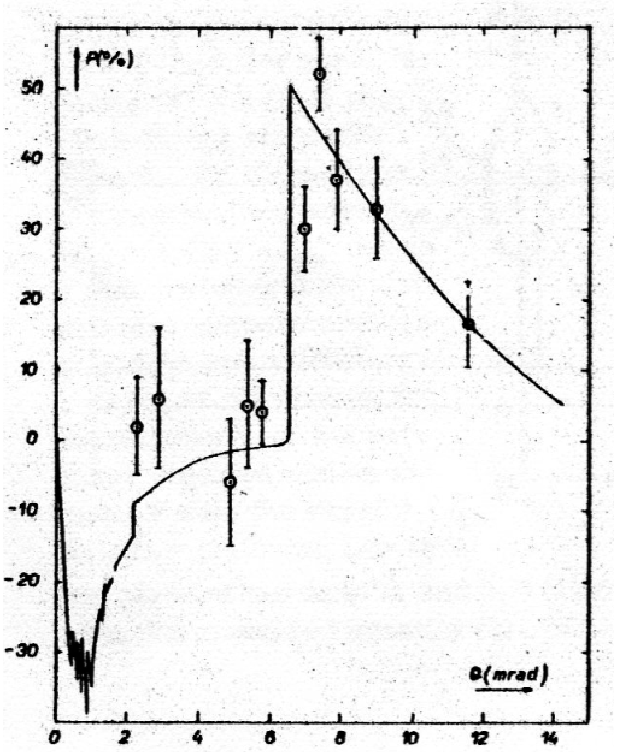




Bremsstrahlung spectrum by electrons of 1 GeV in diamond crystal

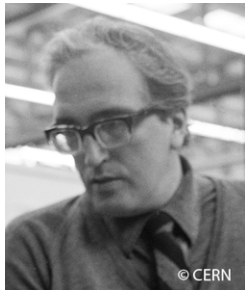
Risultati a Frascati

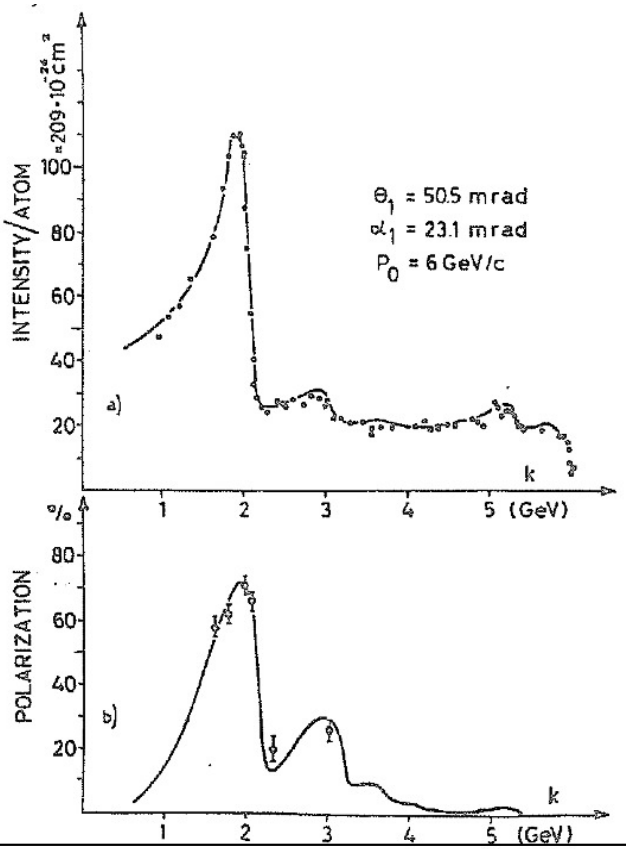




Measurement of the polarization of the coherent bremsstrahlung

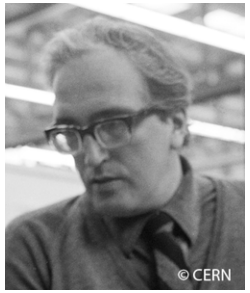
Risultati a DESY





Measurement of the polarization of the coherent bremsstrahlung

Risultati al CERN



Volume 39B, number 5 PHYSICS LETTERS 29 May 1972

SMALL-ANGLE PROTON-PROTON ELASTIC SCATTERING AT VERY HIGH ENERGIES (460 GeV^2 < s < 2900 GeV^2)

G. BARBIELLINI, M. BOZZO, P. DARRIULAT, G. DIAMBRINI PALAZZI, G. De ZORZI, A. FAINBERG, M. I. FERRERO, M. HOLDER, A. McFARLAND, G. MADERNI, S. ORITO, J. PILCHER, C. RUBBIA, A. SANTRONI, G. SETTE, A. STAUDE, P. STROLIN and K. TITTEL

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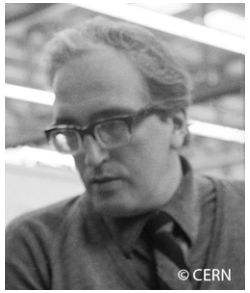
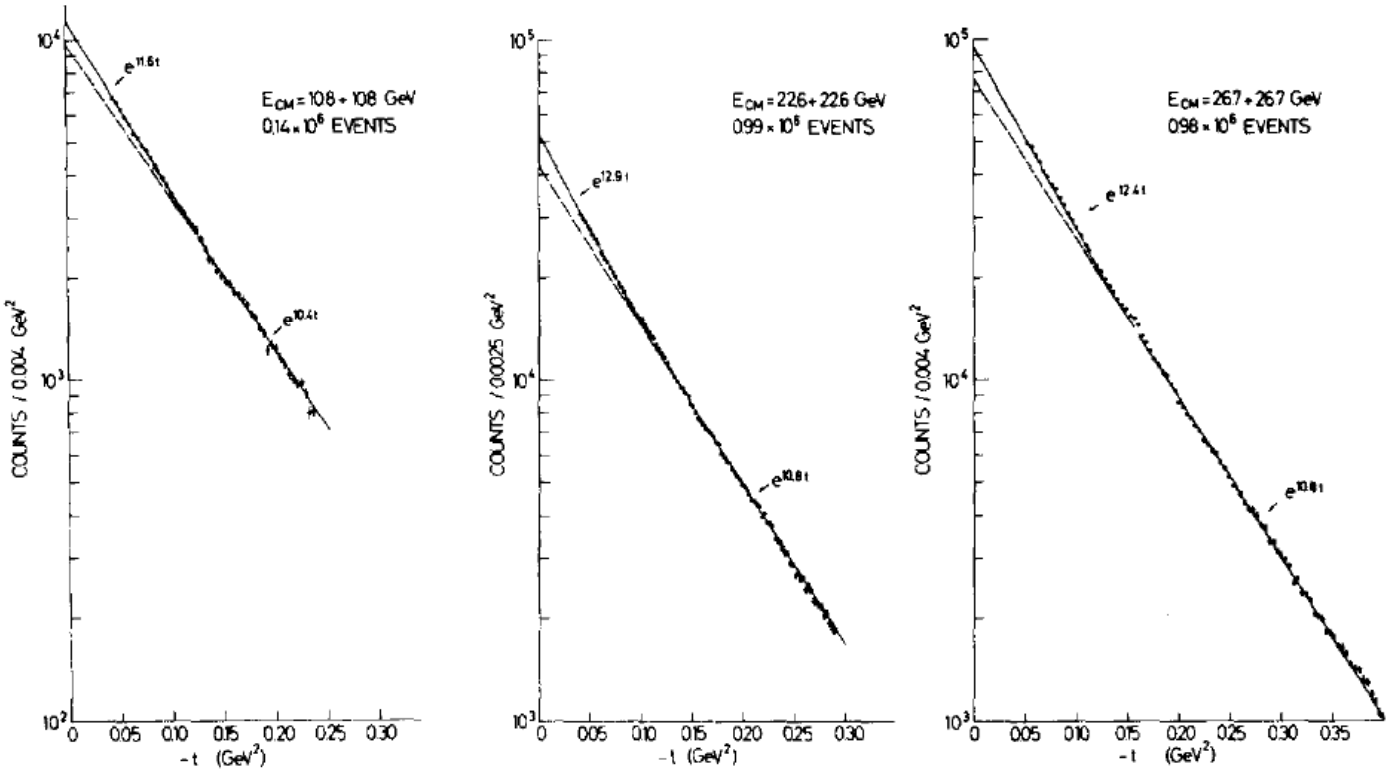
Received 24 April 1972

We have investigated the above processes at the CERN Intersecting Storage Rings (ISR). Results show a marked change of the slope parameter $b(t,s) = (\mathrm{d}/\mathrm{d}t) \ln (\mathrm{d}\sigma/\mathrm{d}t)$ around $-t \approx 0.10$ GeV^2. The s- and t-dependence of $b(t,s)$ have been observed over the interval 460 GeV^2 < s < 2900 GeV^2 and 0.02 GeV^2 < t < 0.40 GeV^2.

Risultati al CERN





Transfer momentum distributions