

Experimental Determination of Electron Orbits in the Field of a Magnetic Dipole

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Part II

In the preceding issue of *Tellus* were published the first results of our investigations of cosmic ray orbits in the field of a magnetic dipole. The investigations were carried out by measurements on a model with particle momentum range corresponding to 10^{10} — ∞ eV/c. A detailed description of the apparatus and the performance of the experiment is given in part I of the present paper.

The general idea of the experiment is to measure the asymptotic direction of a charged particle orbit far away from the dipole. The results are given as two angles, which define the direction of the asymptote: Φ_N , the north latitude angle and Ψ_E , a longitude angle, reckoned eastwards from the meridional plane through the point of incidence, as shown in Fig. 1. The vector in Fig. 1 is the final velocity vector.

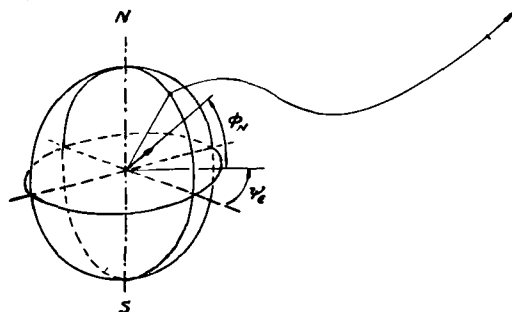


Fig. 1. The angles of Ψ_E and Φ_N in the system of coordinates of the terella.

In the diagrams the angles Φ_N , and Ψ_E are plotted against momentum of the particle. Measurements have been taken for each 10° of latitude. "N-S plane" and "E-W plane" in the diagrams mean that the curves correspond to particles arriving in north-south and east-west direction respectively. Thus each latitude is represented by four diagrams:

Ψ_E	in the N-S plane
Φ_N	" " N-S "
Ψ_E	" " E-W "
Φ_N	" " E-W "

The dot-dashed curve marked O corresponds to particles which arrive from zenith; curves marked 8°N , 16°N , 24°N , etc. correspond to particles arriving from north and make angles of 8° , 16° , 24° , etc. with the zenith. Curves marked 8°S , 16°S , etc. correspond to particles arriving in the same way from south. The particles arriving at the earth are positively charged.

Diagrams for latitudes 90° — 60° (1—14) were published in *Tellus*, No. 2, 1953, diagrams published in this paper include latitudes 50° — 0° (15—37).

Errata.

In diagram 7, p 149 is Ψ_N . Should be Ψ_E .
In diagram 13, p 155 is Ψ_N . Should be Ψ_E .

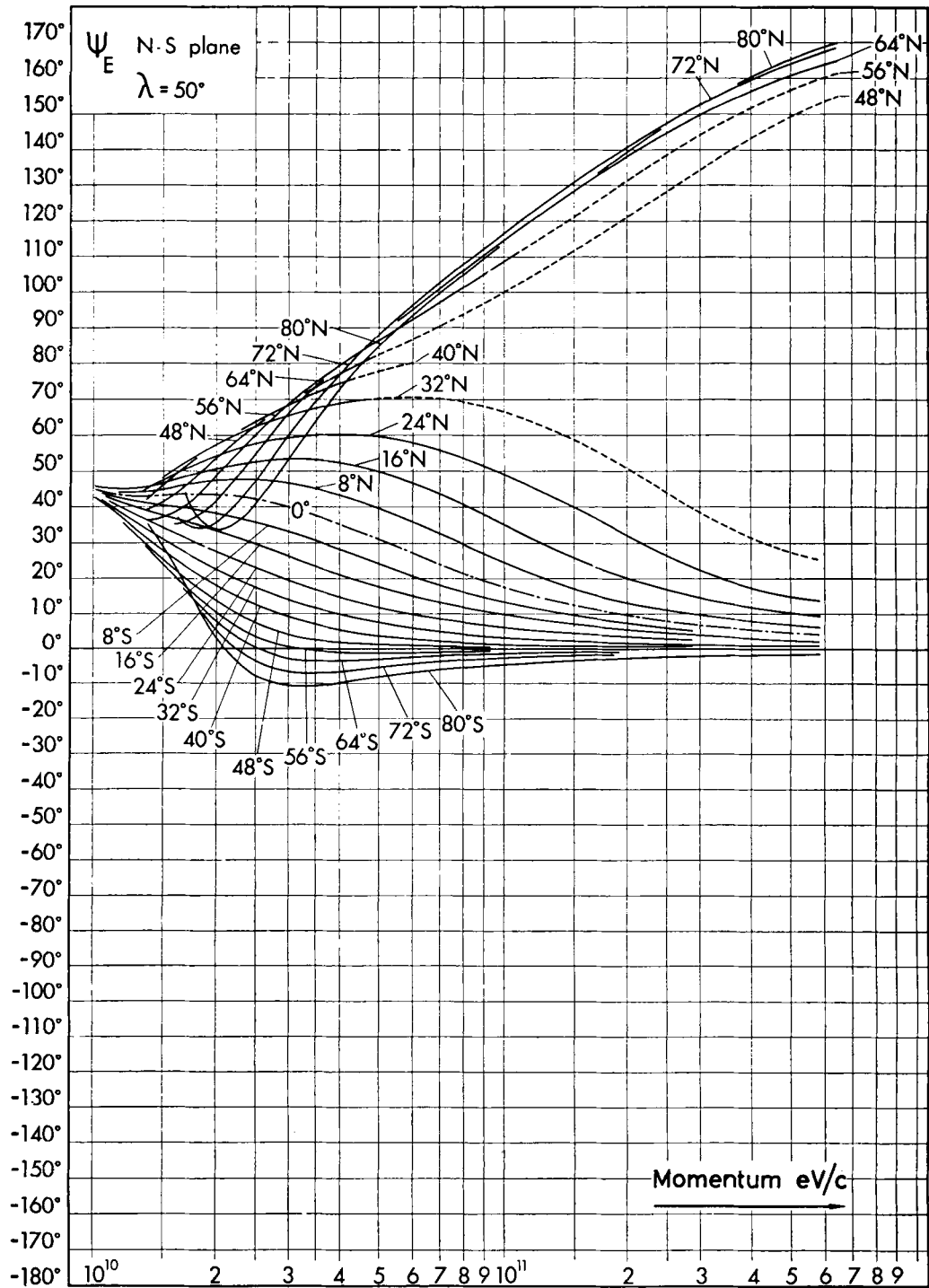


Diagram 15

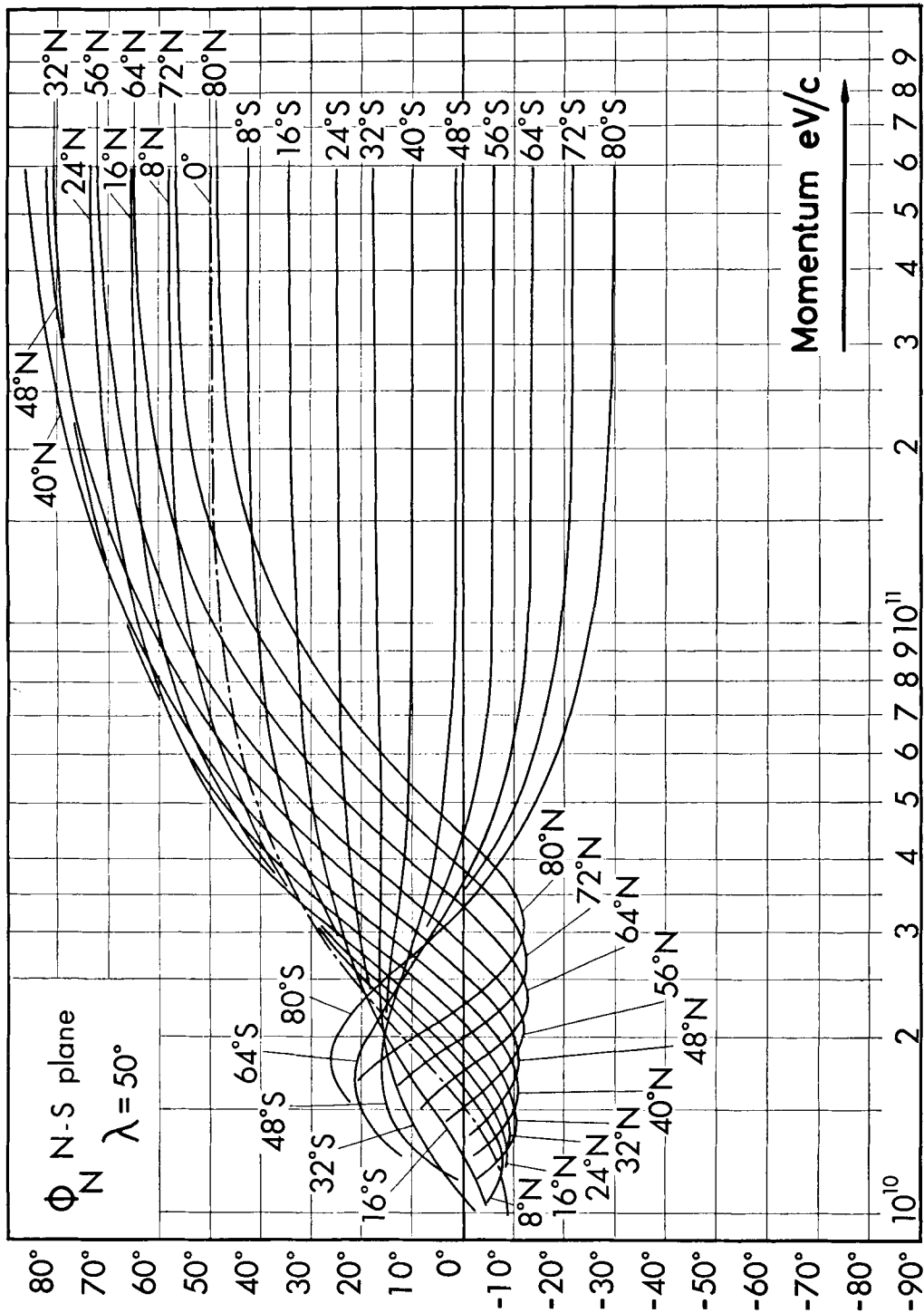


Diagram 16

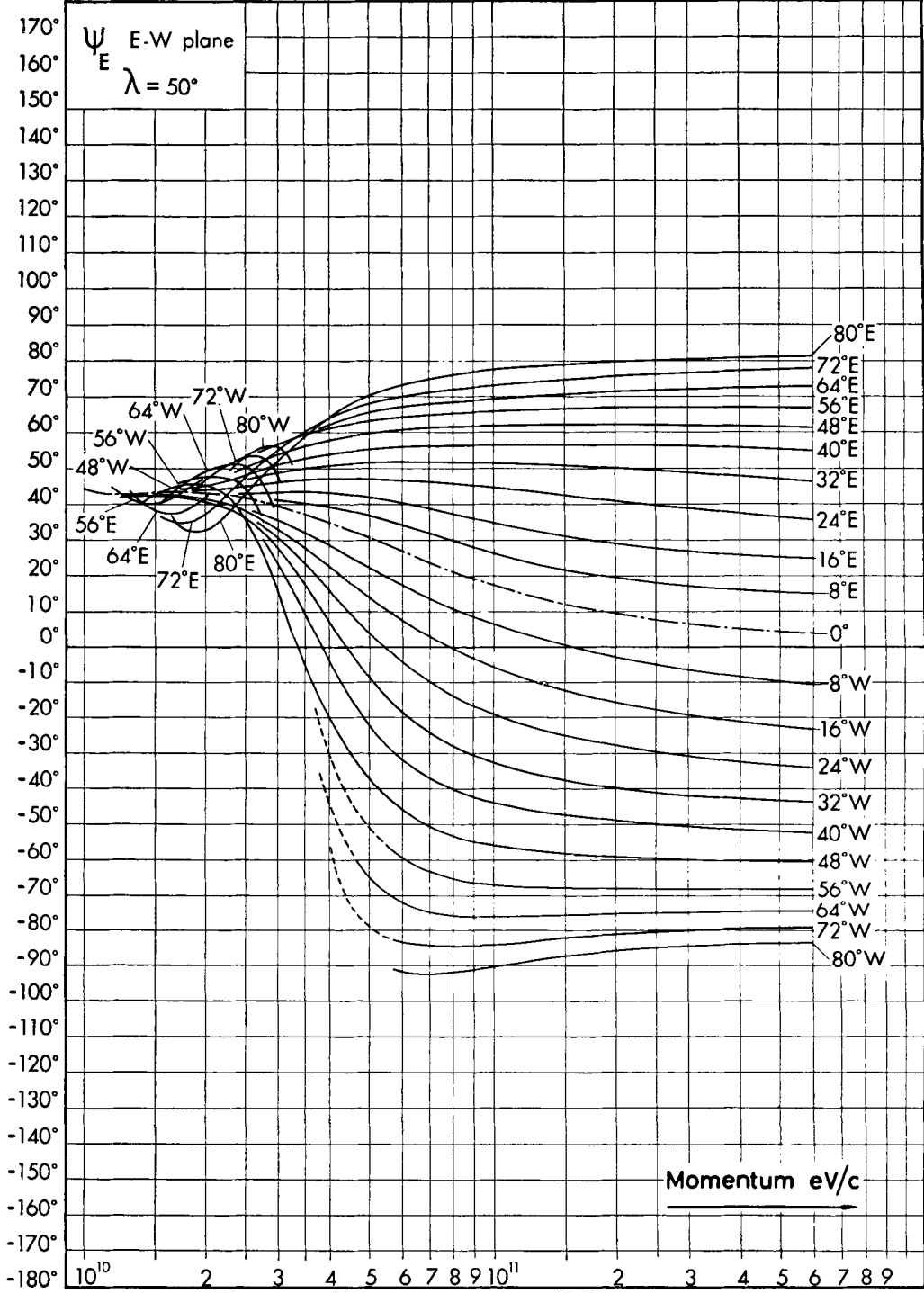


Diagram 17

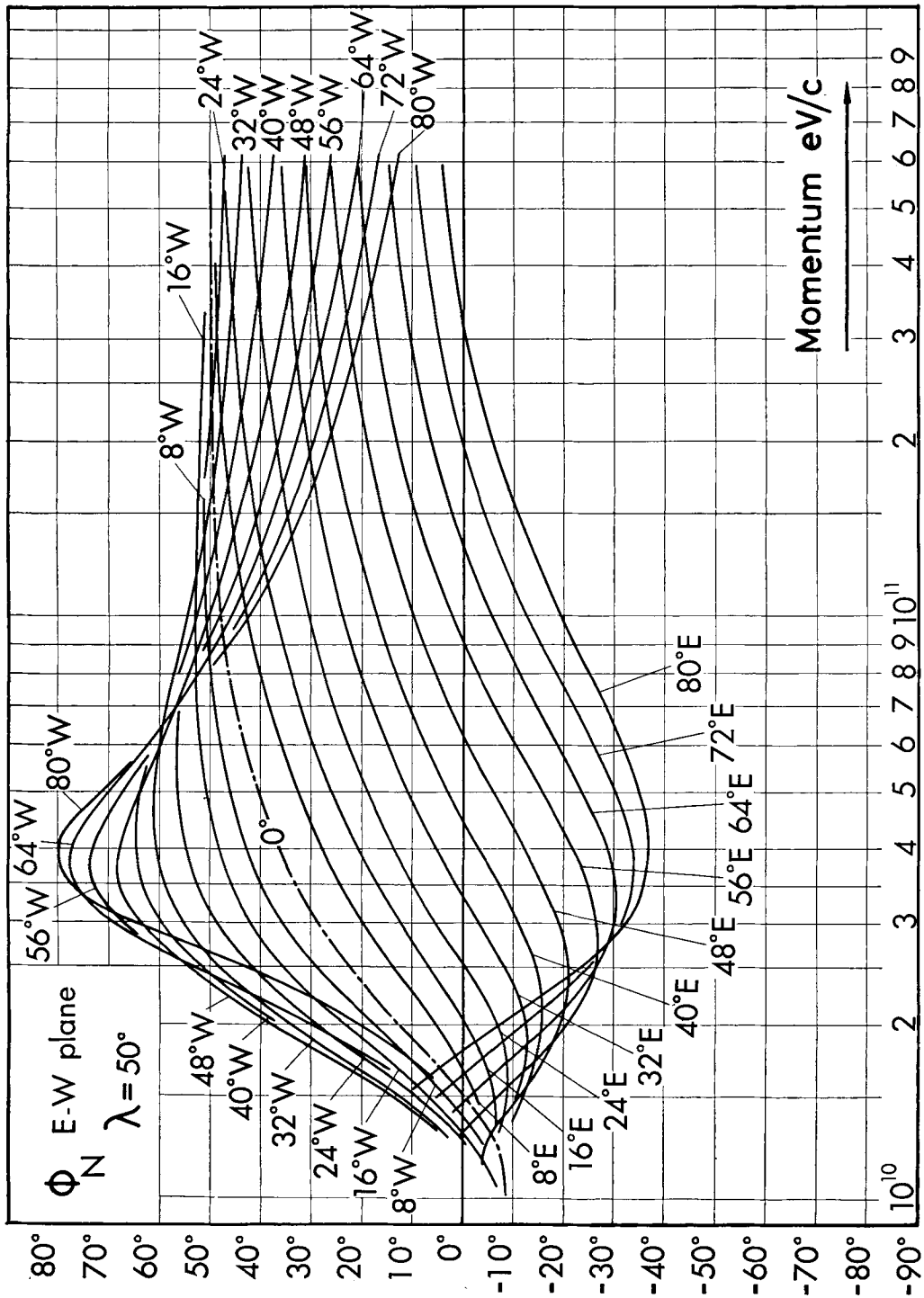


Diagram 18

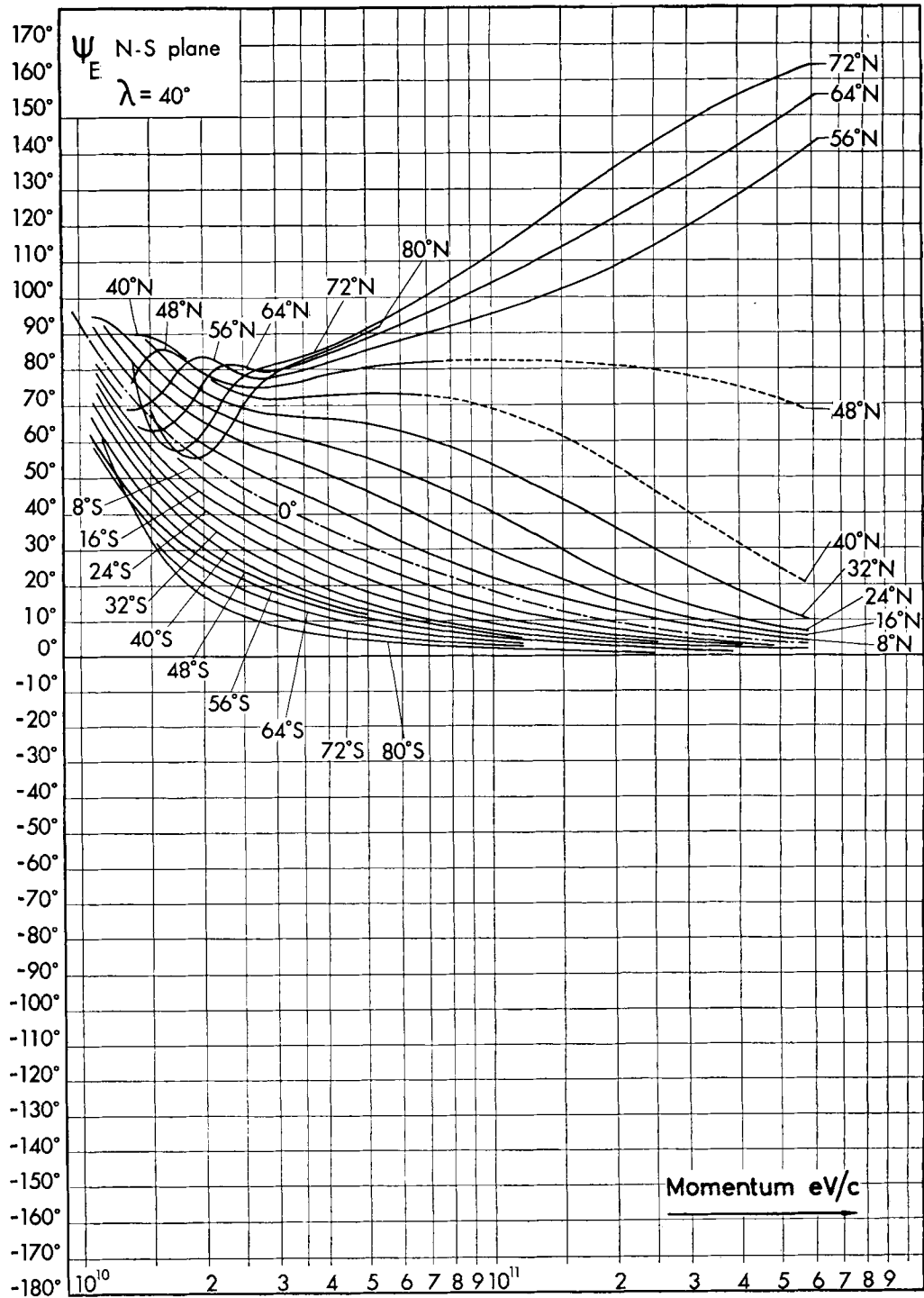
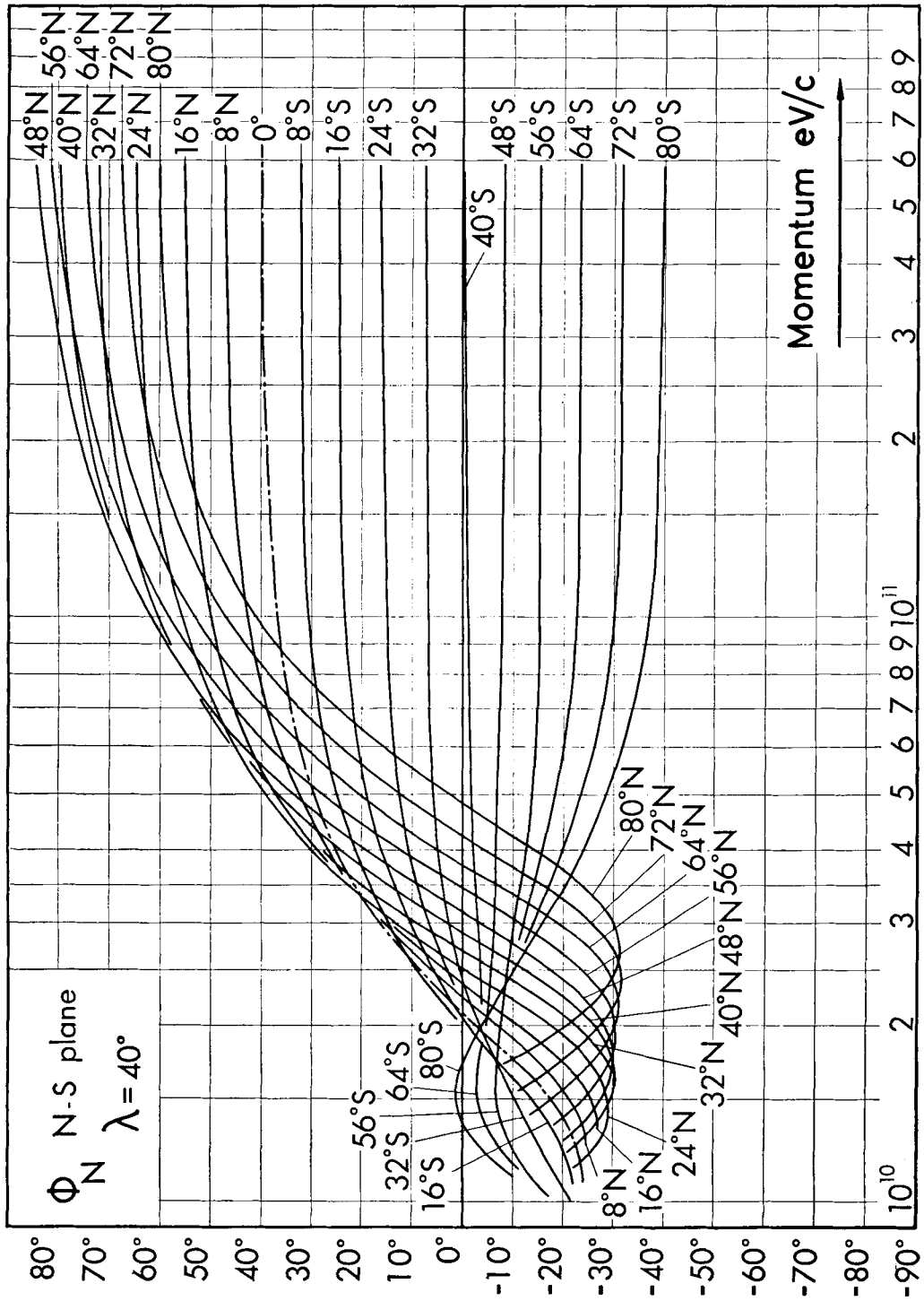


Diagram 19



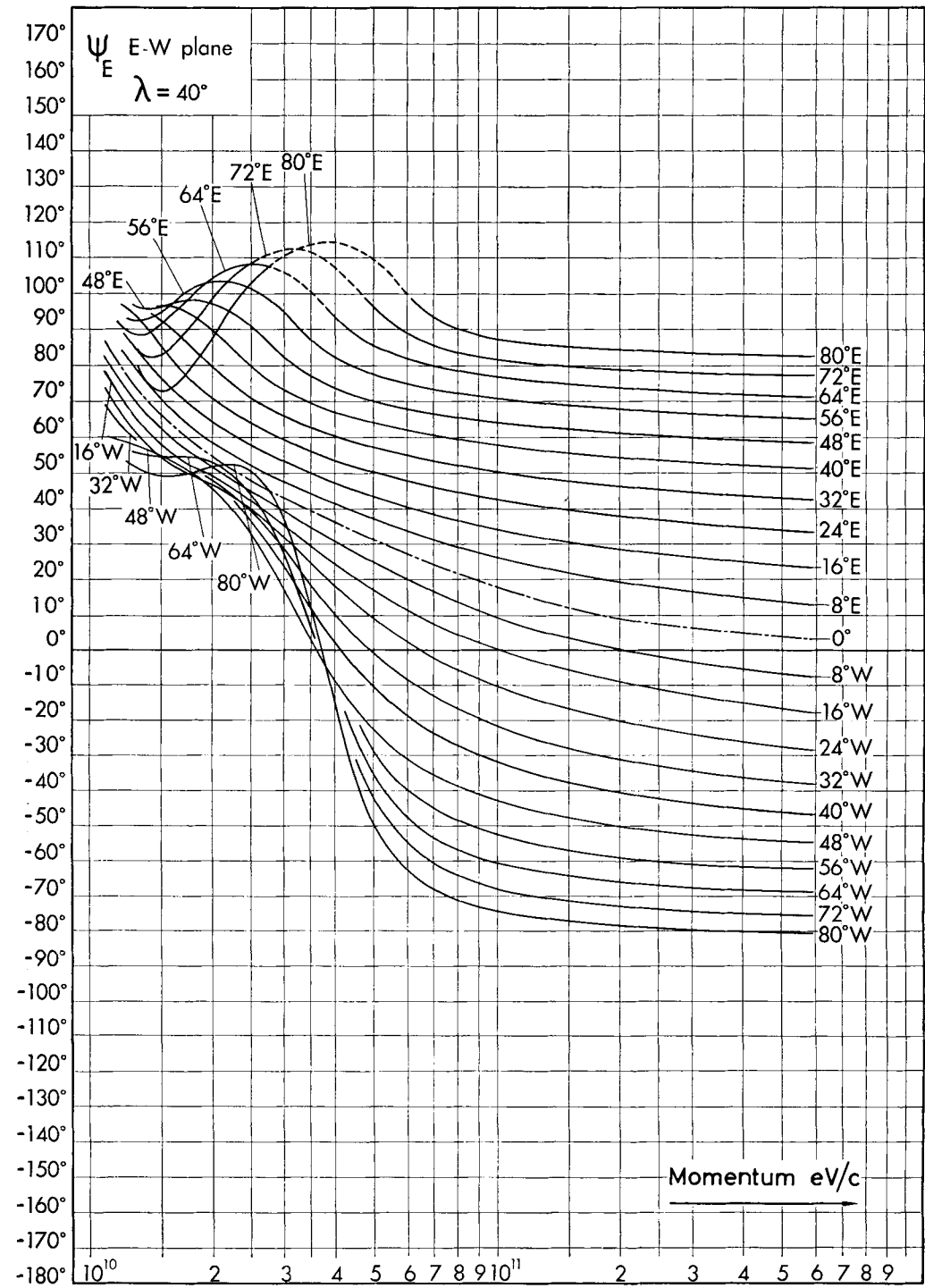


Diagram 21

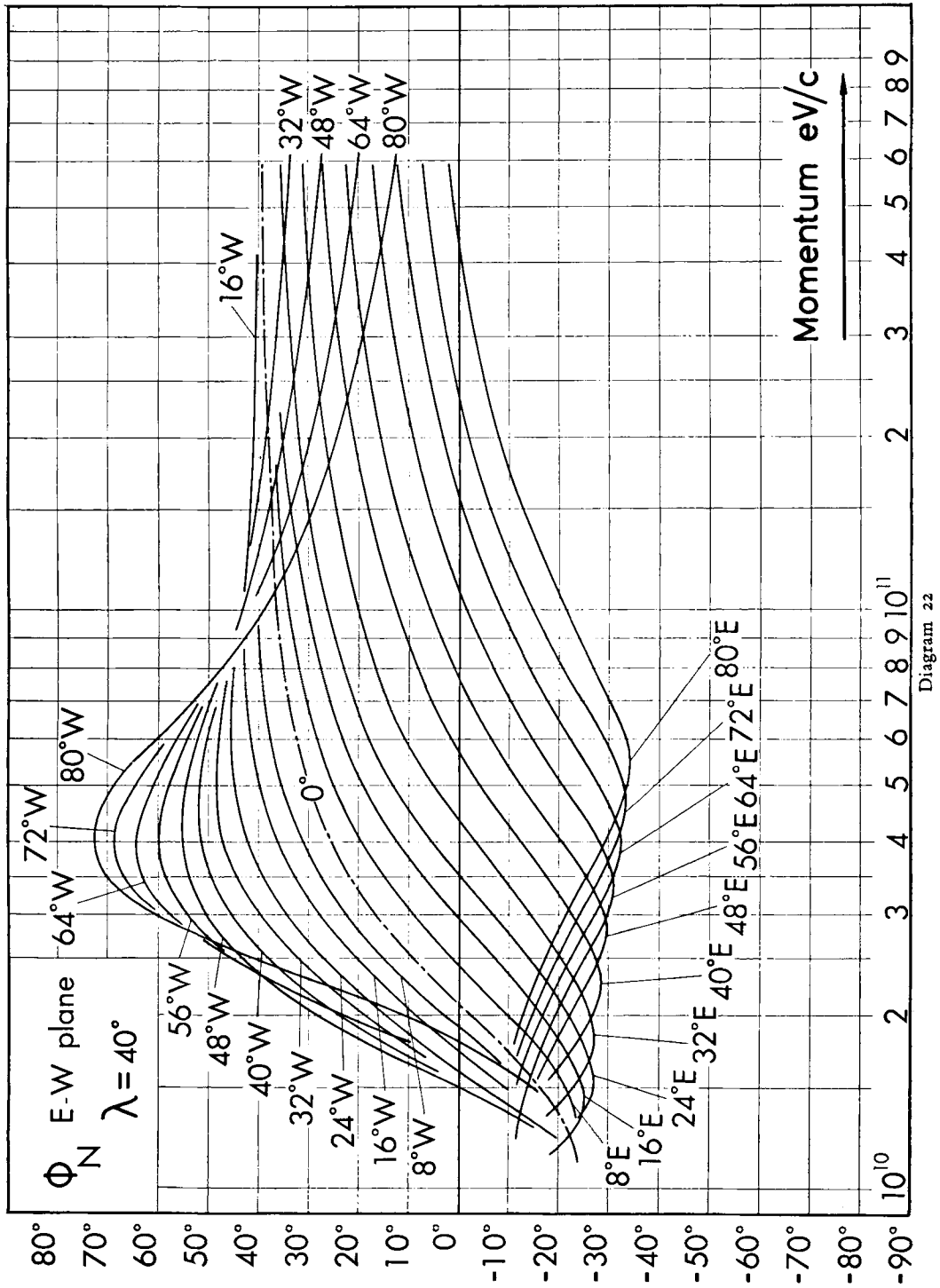


Diagram 22

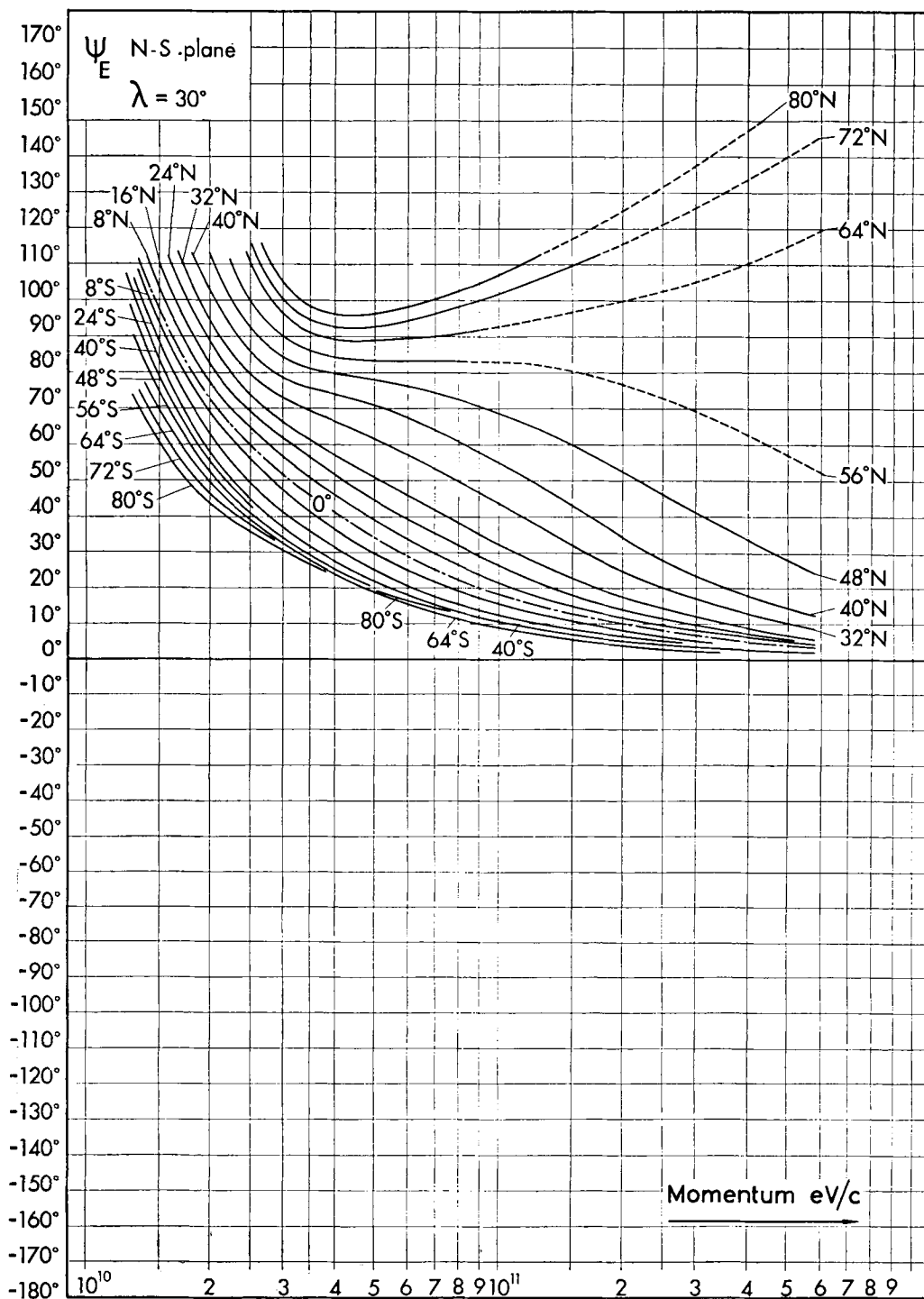


Diagram 23

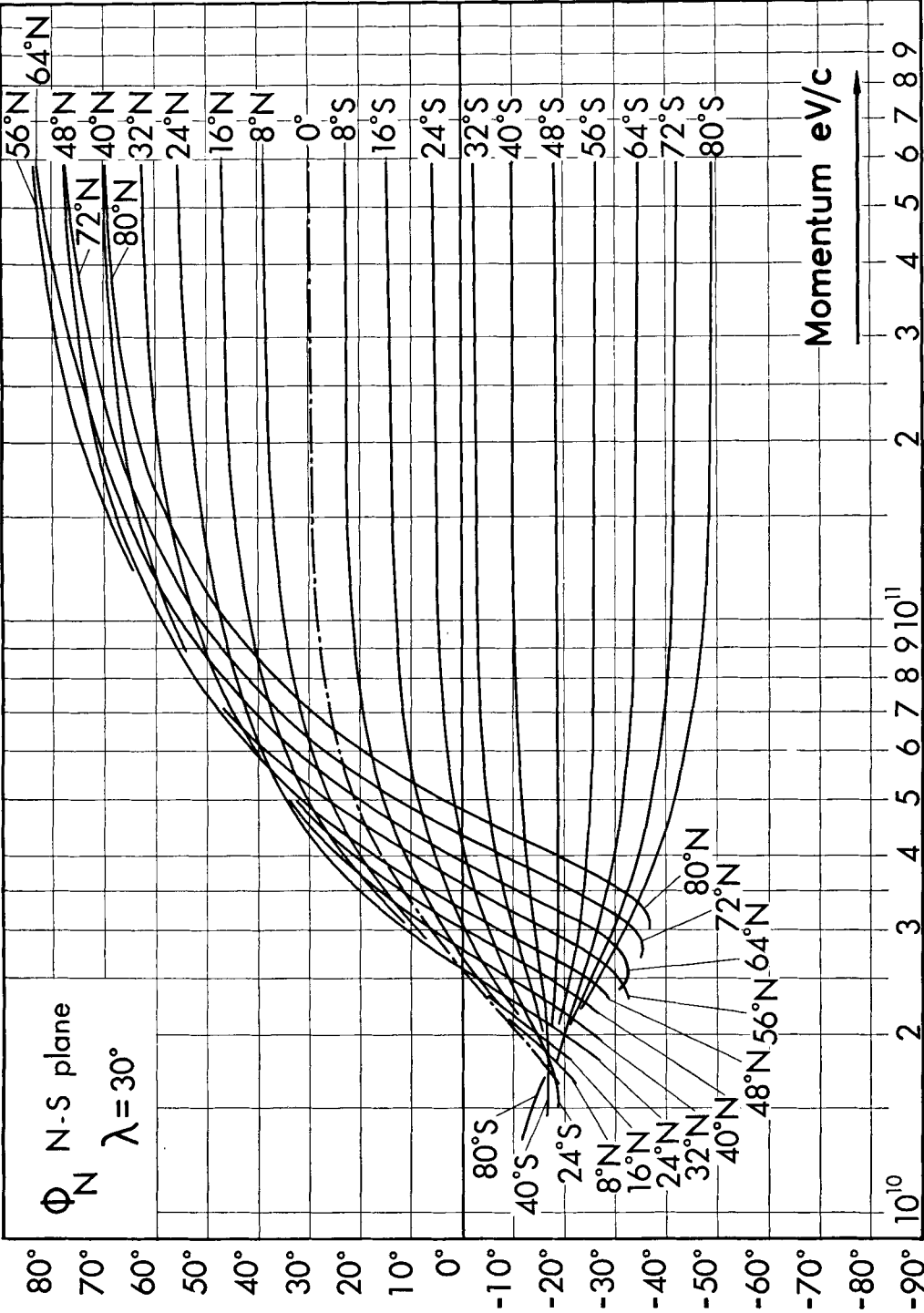


Diagram 24

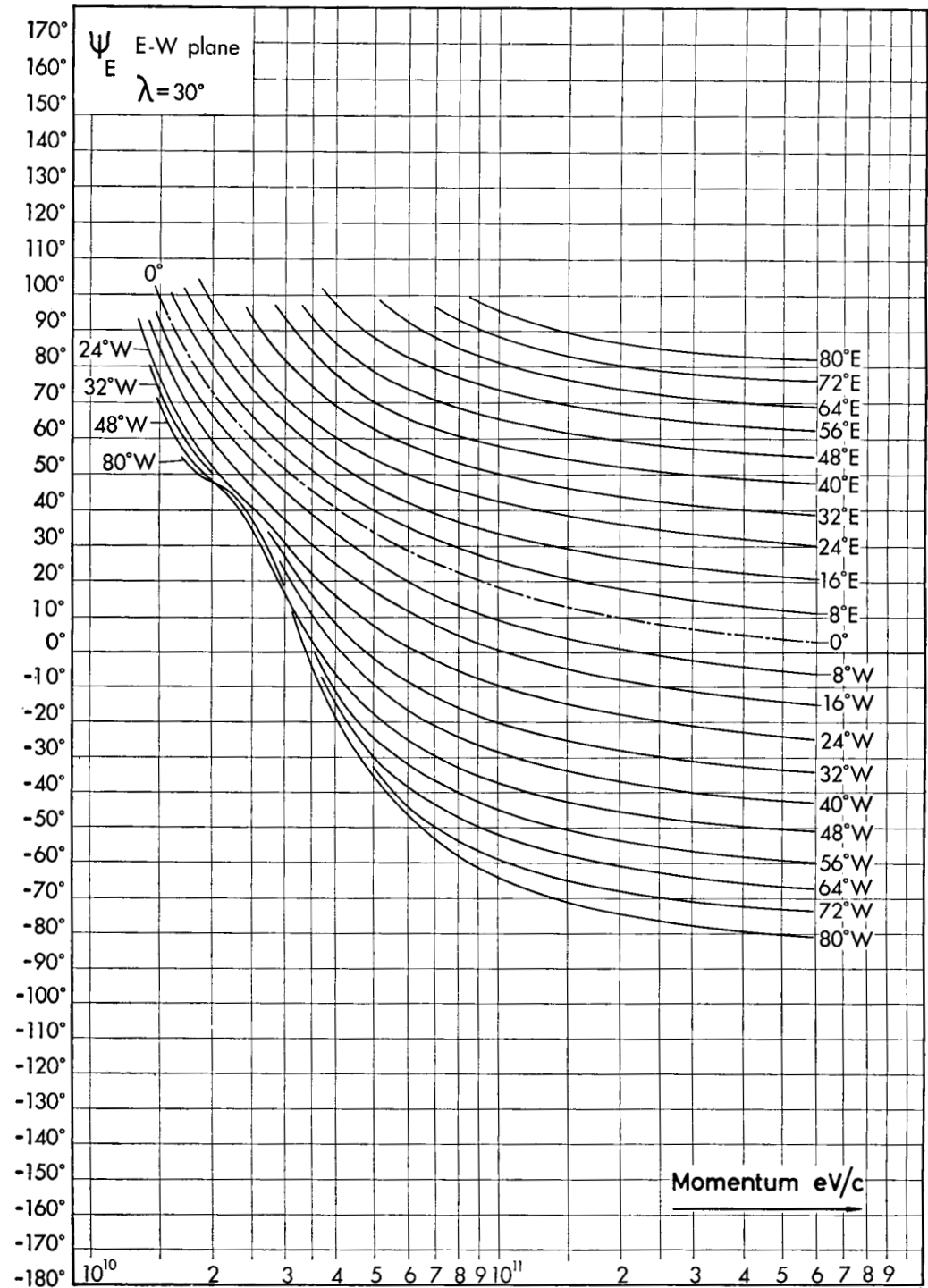


Diagram 25

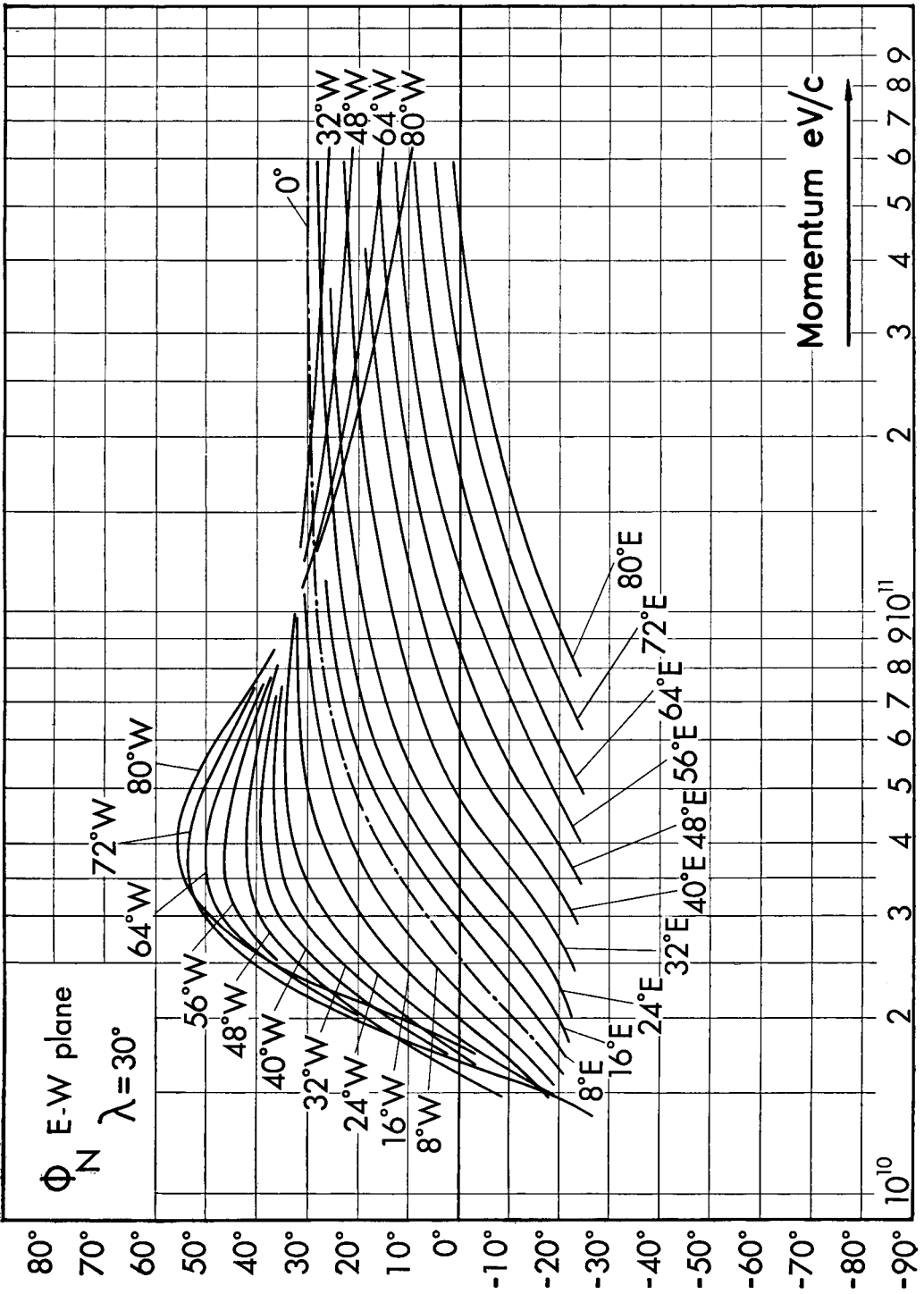


Diagram 26

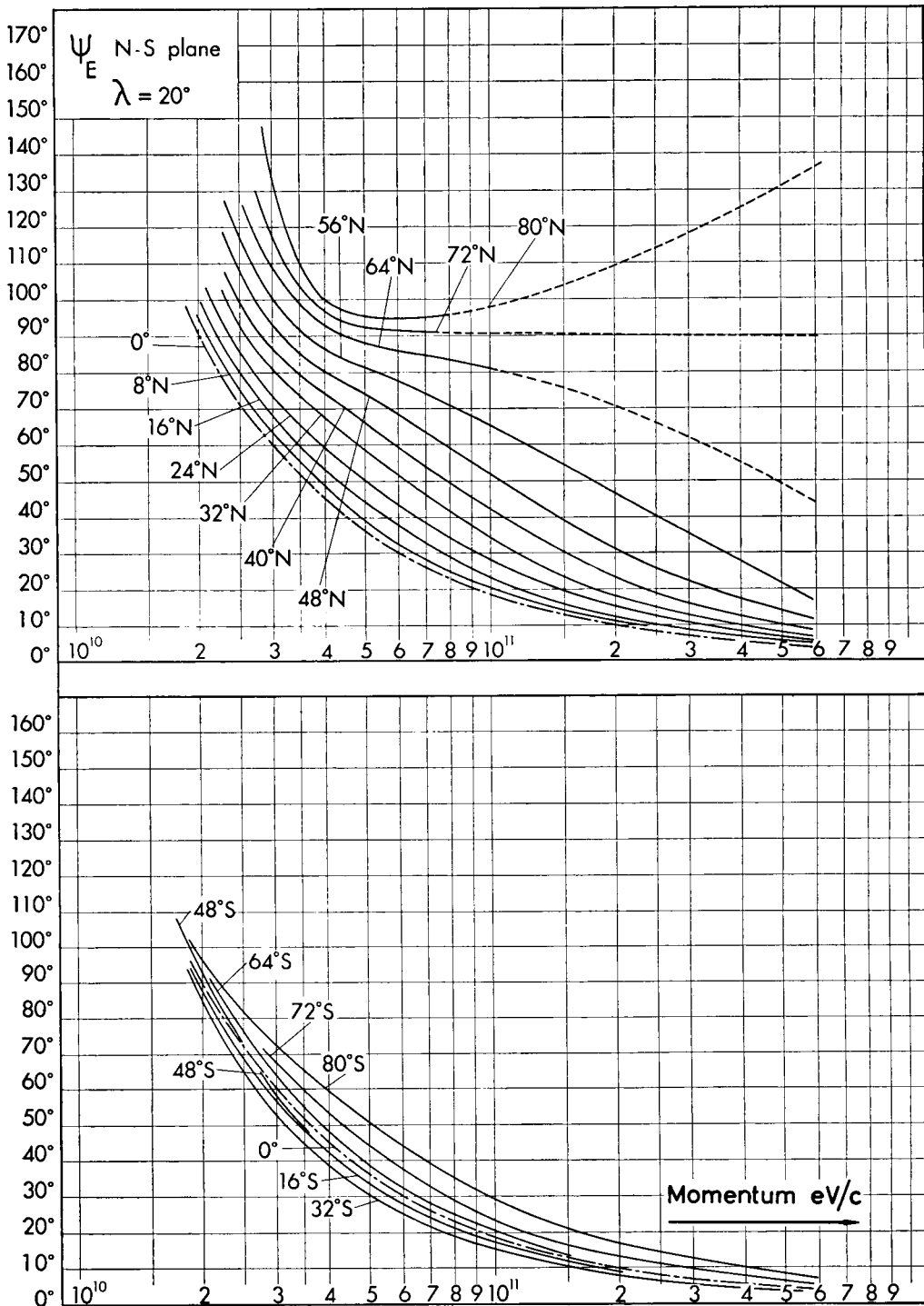


Diagram 27

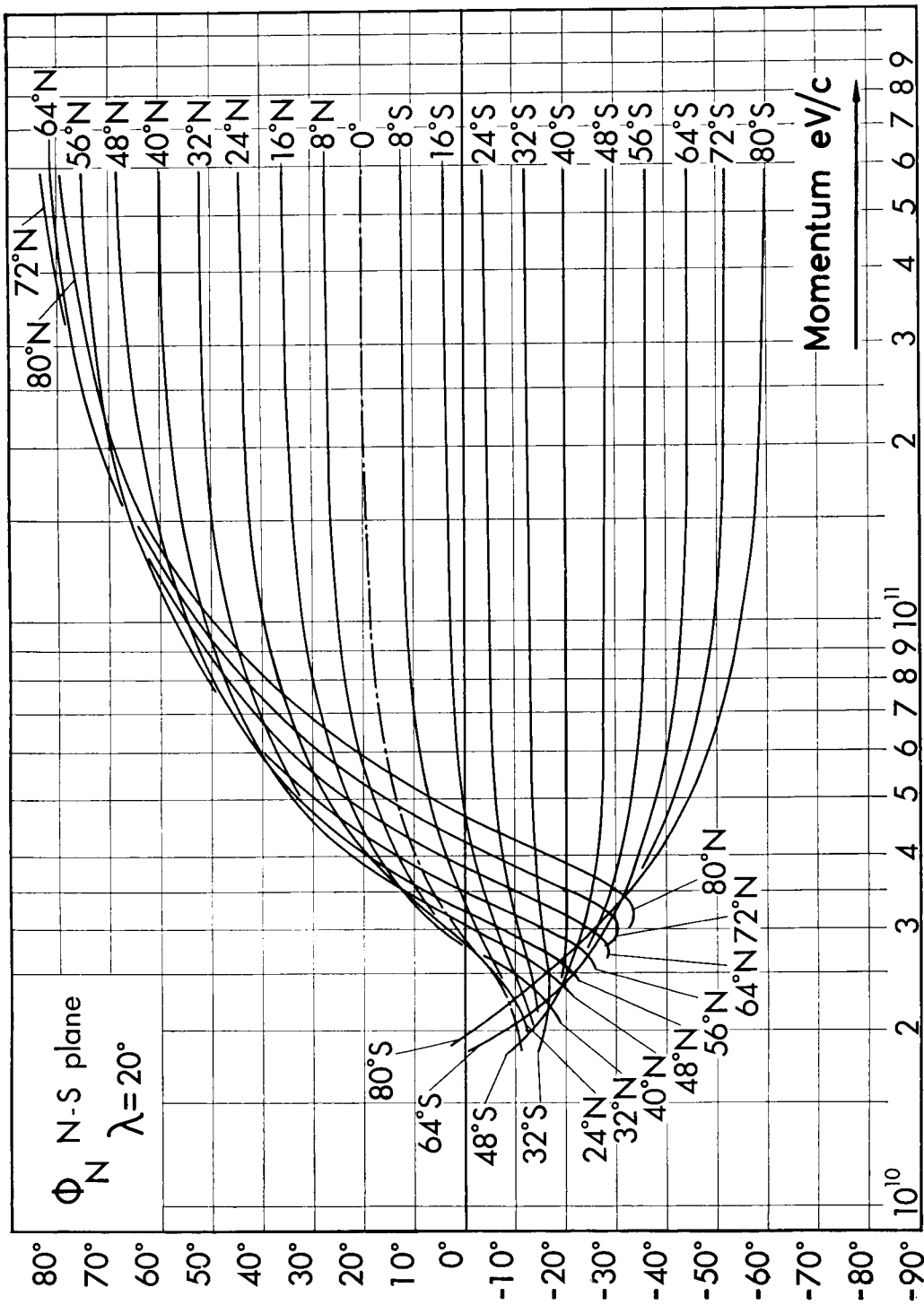


Diagram 28

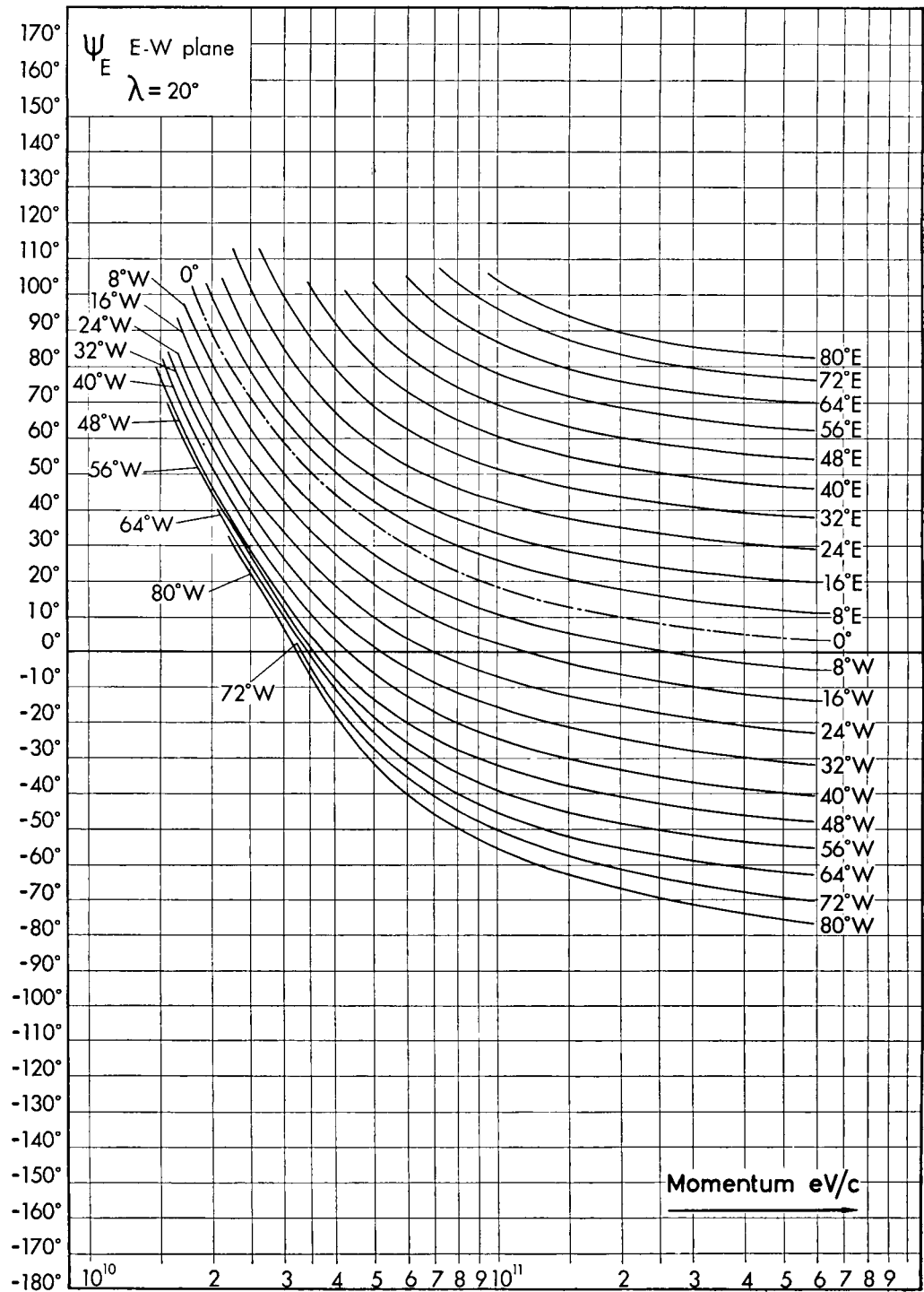


Diagram 29

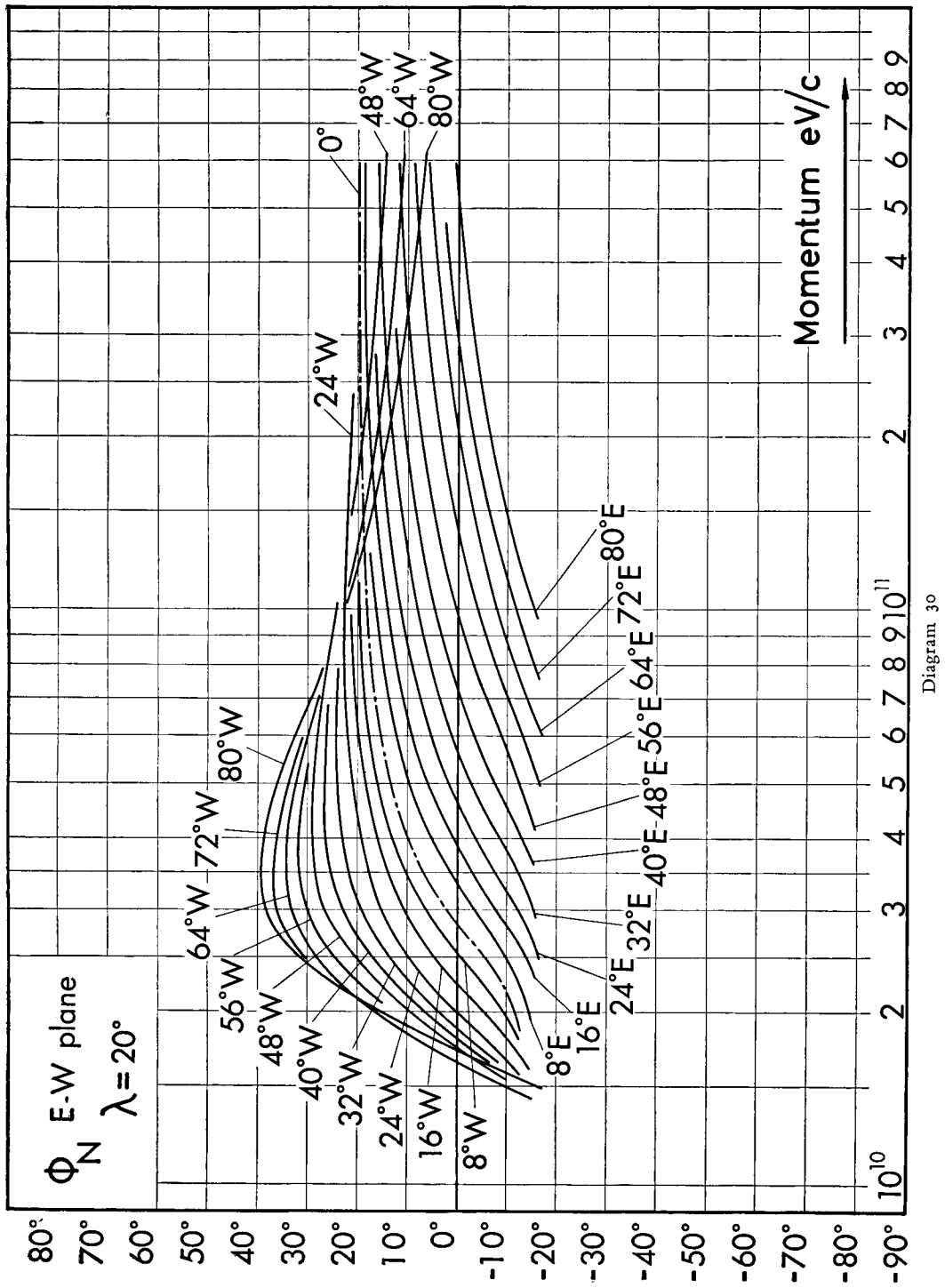


Diagram 30

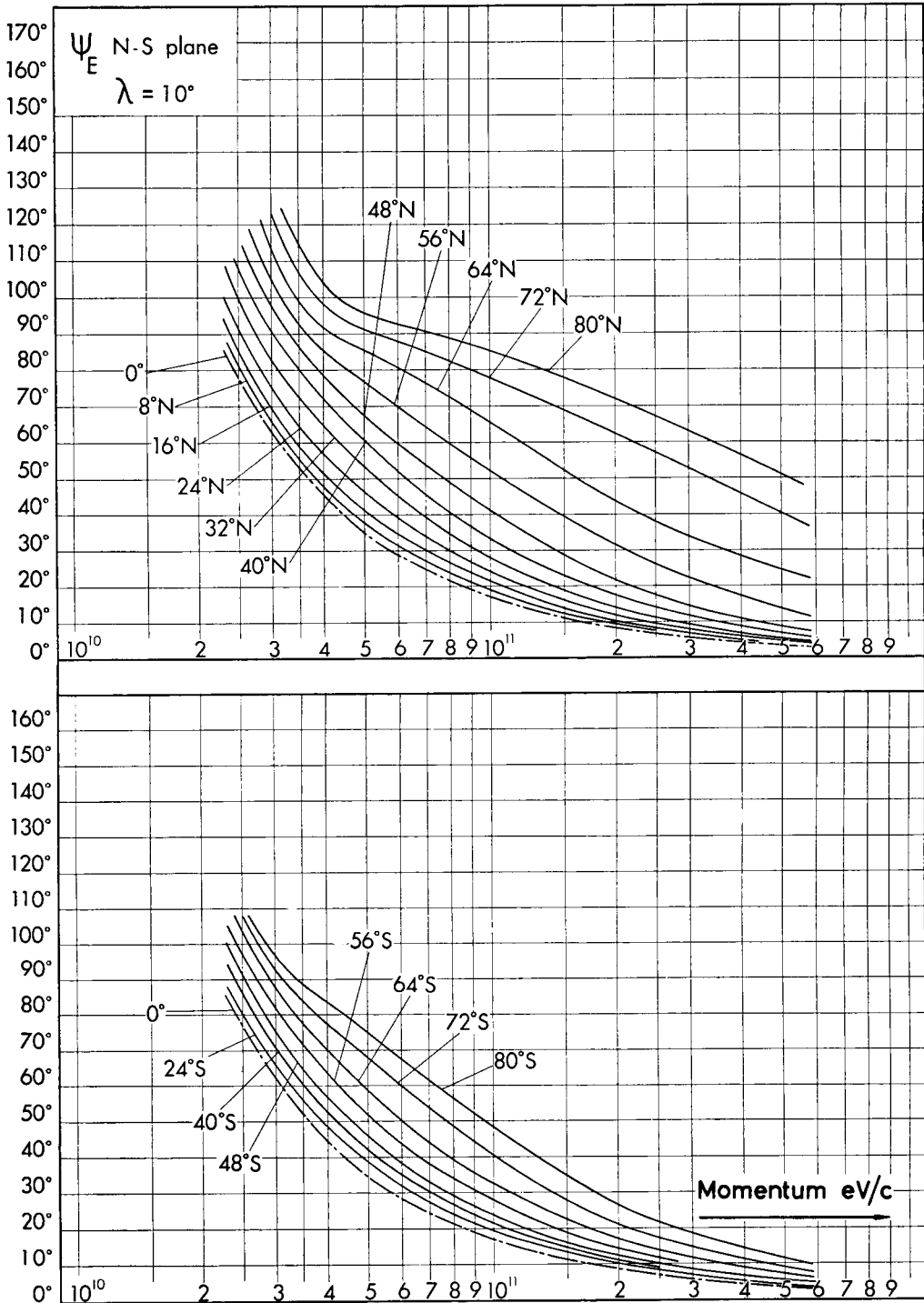


Diagram 31

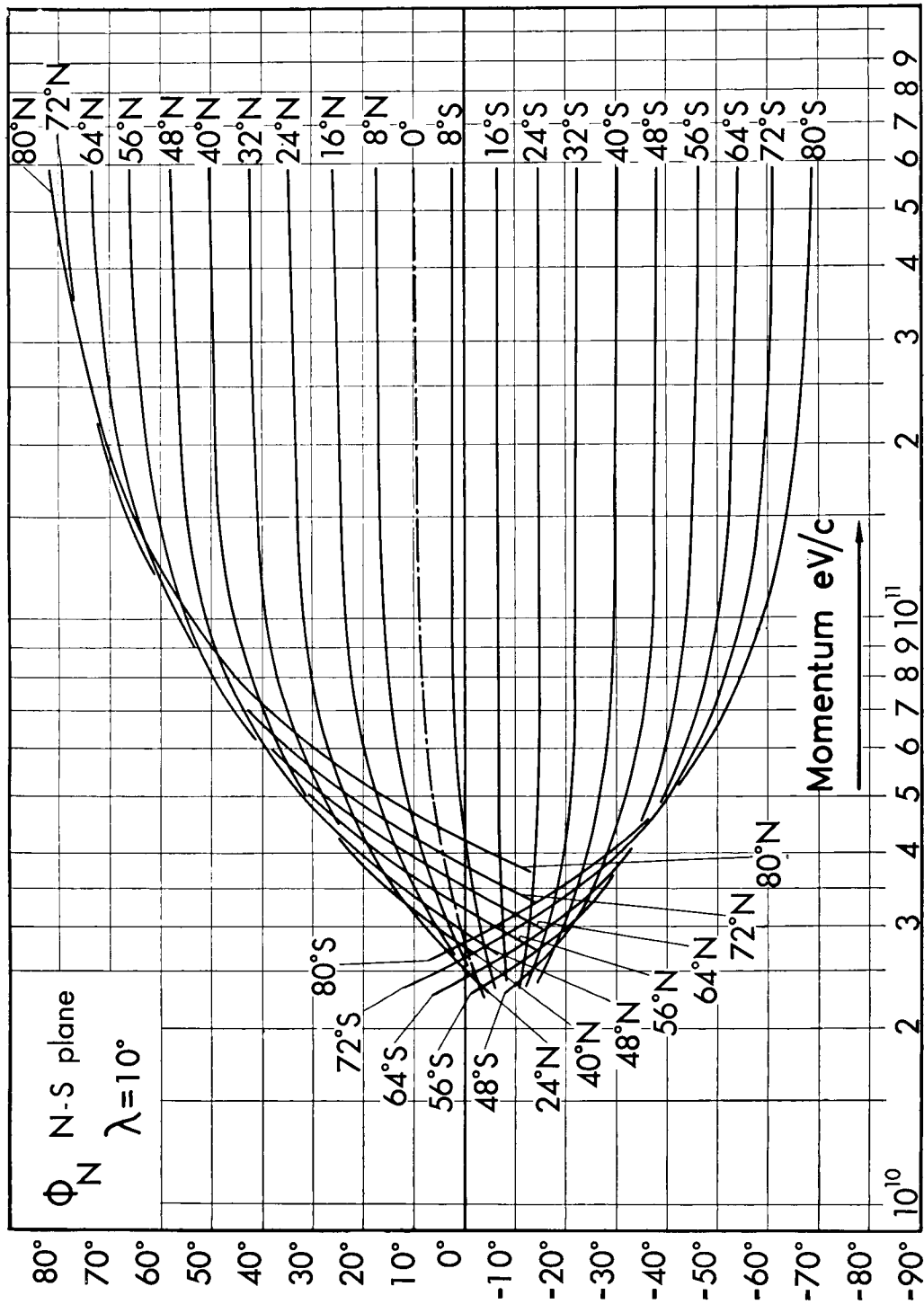


Diagram 32

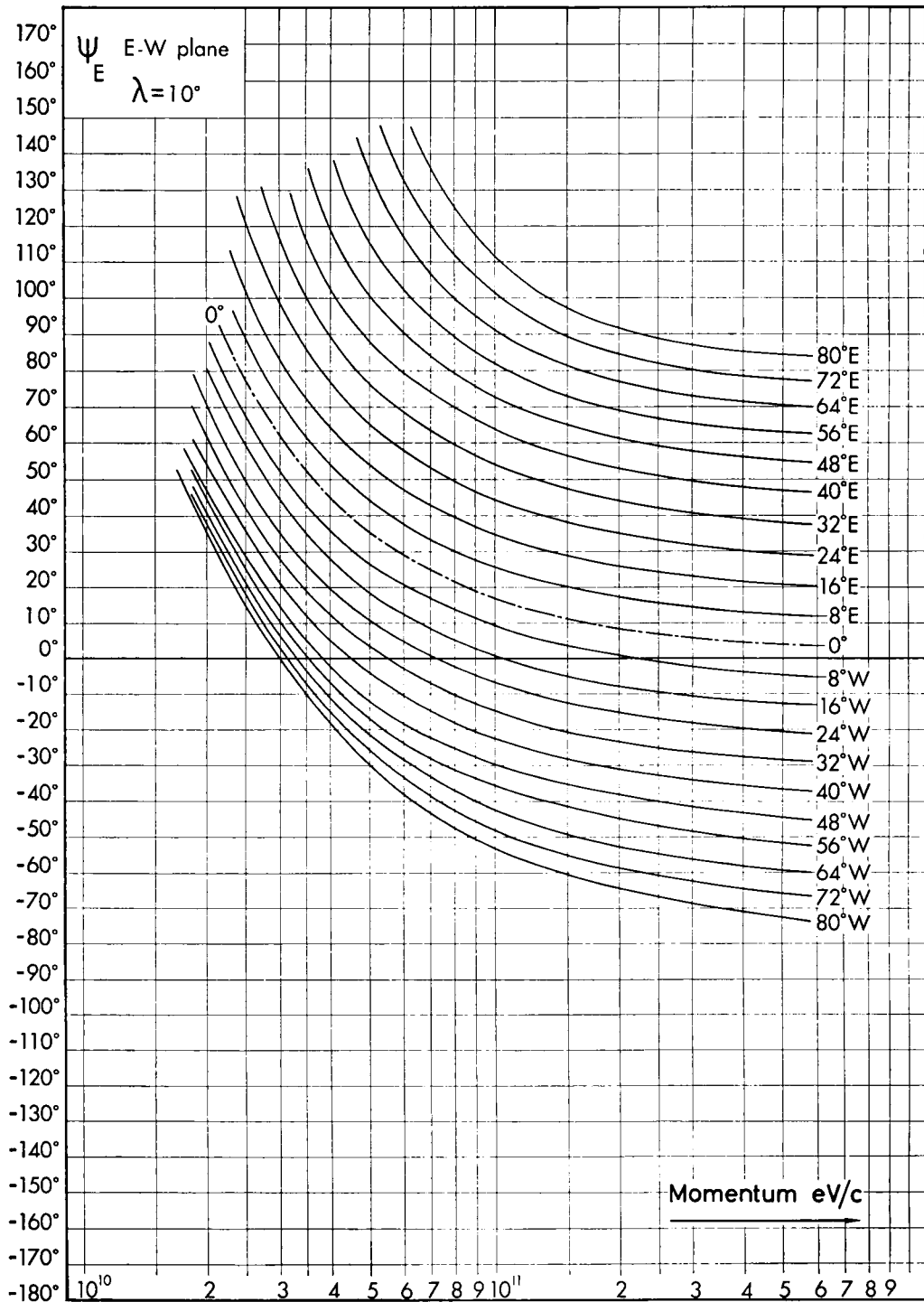


Diagram 33

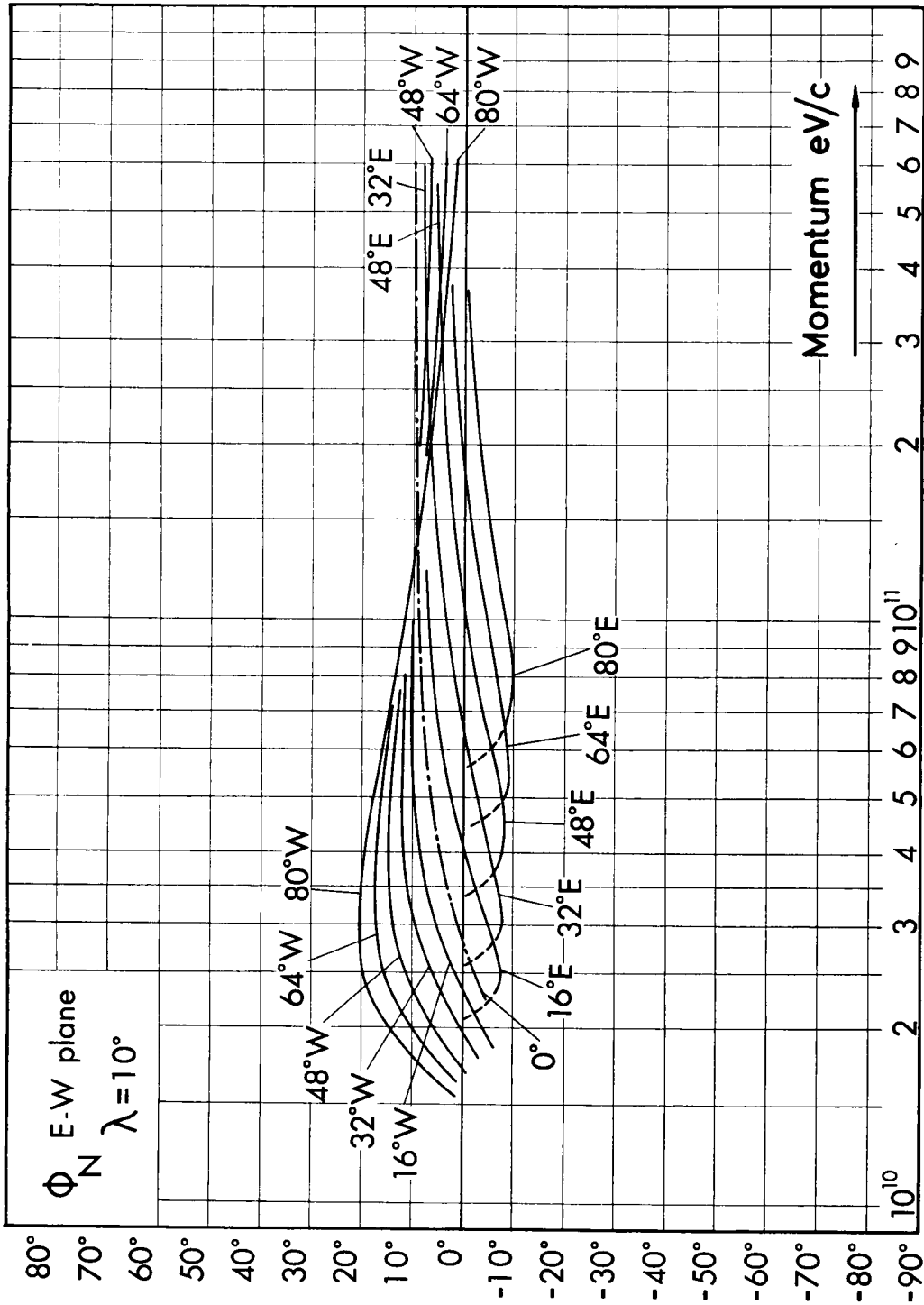


Diagram 34

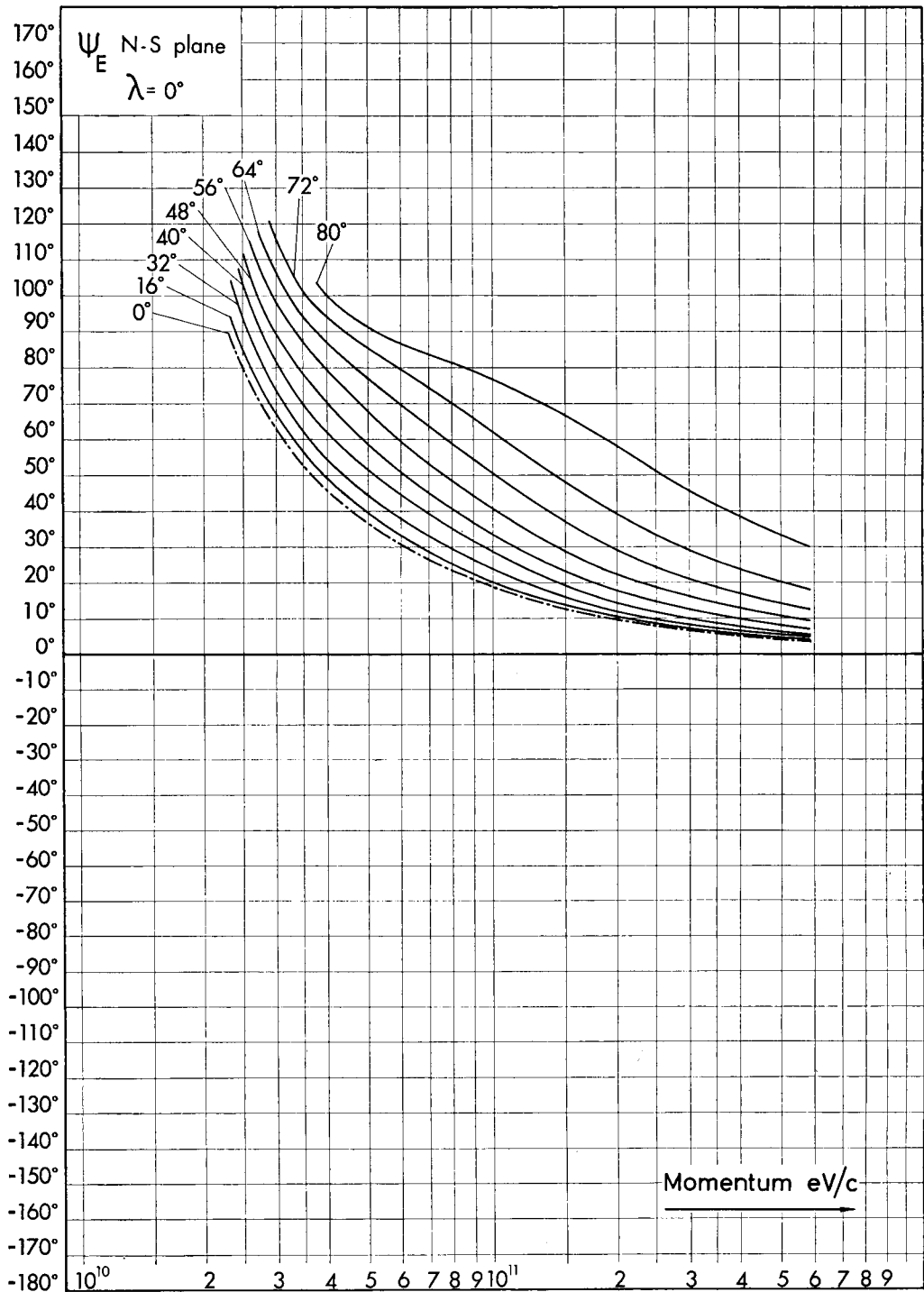


Diagram 35

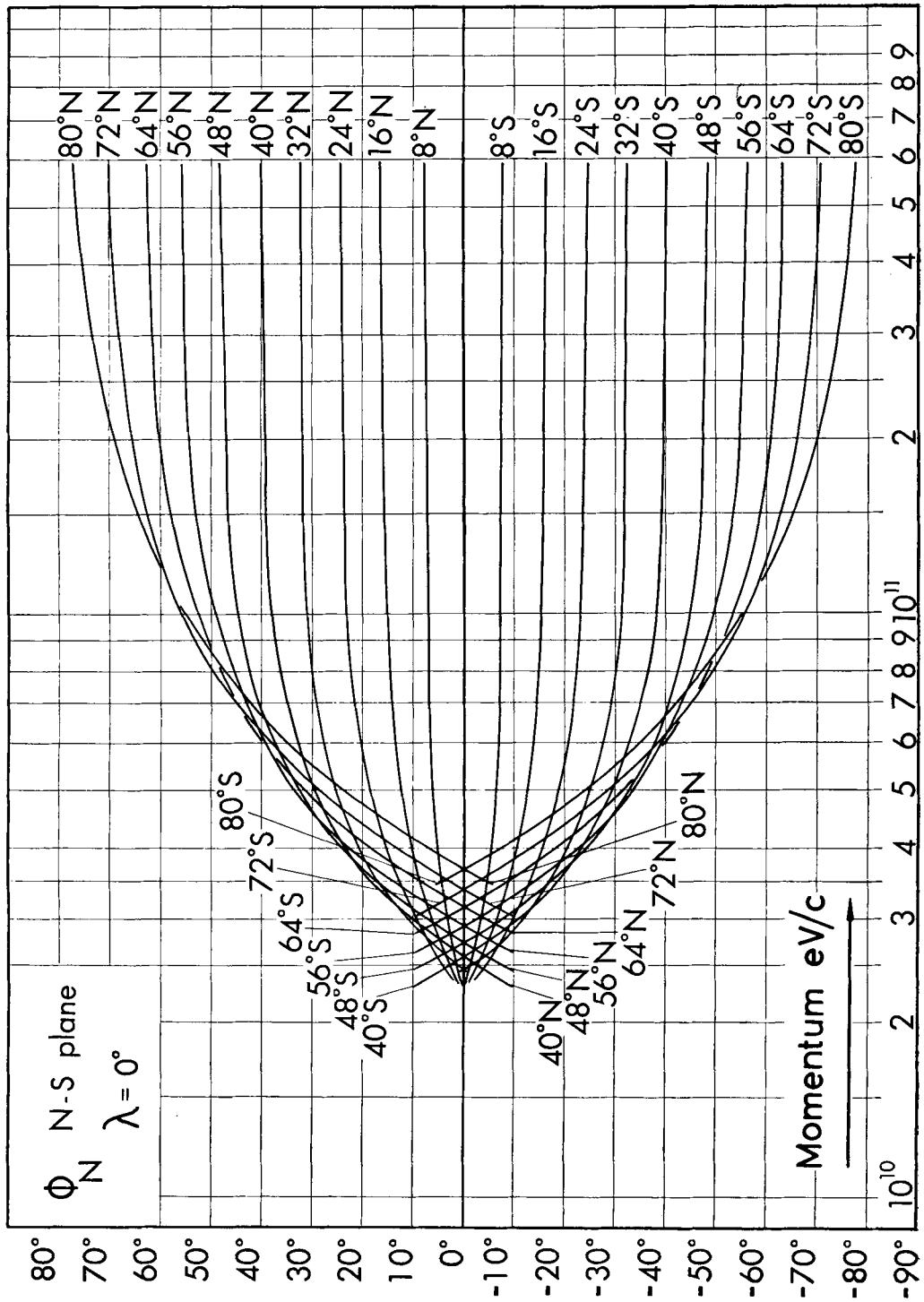


Diagram 36

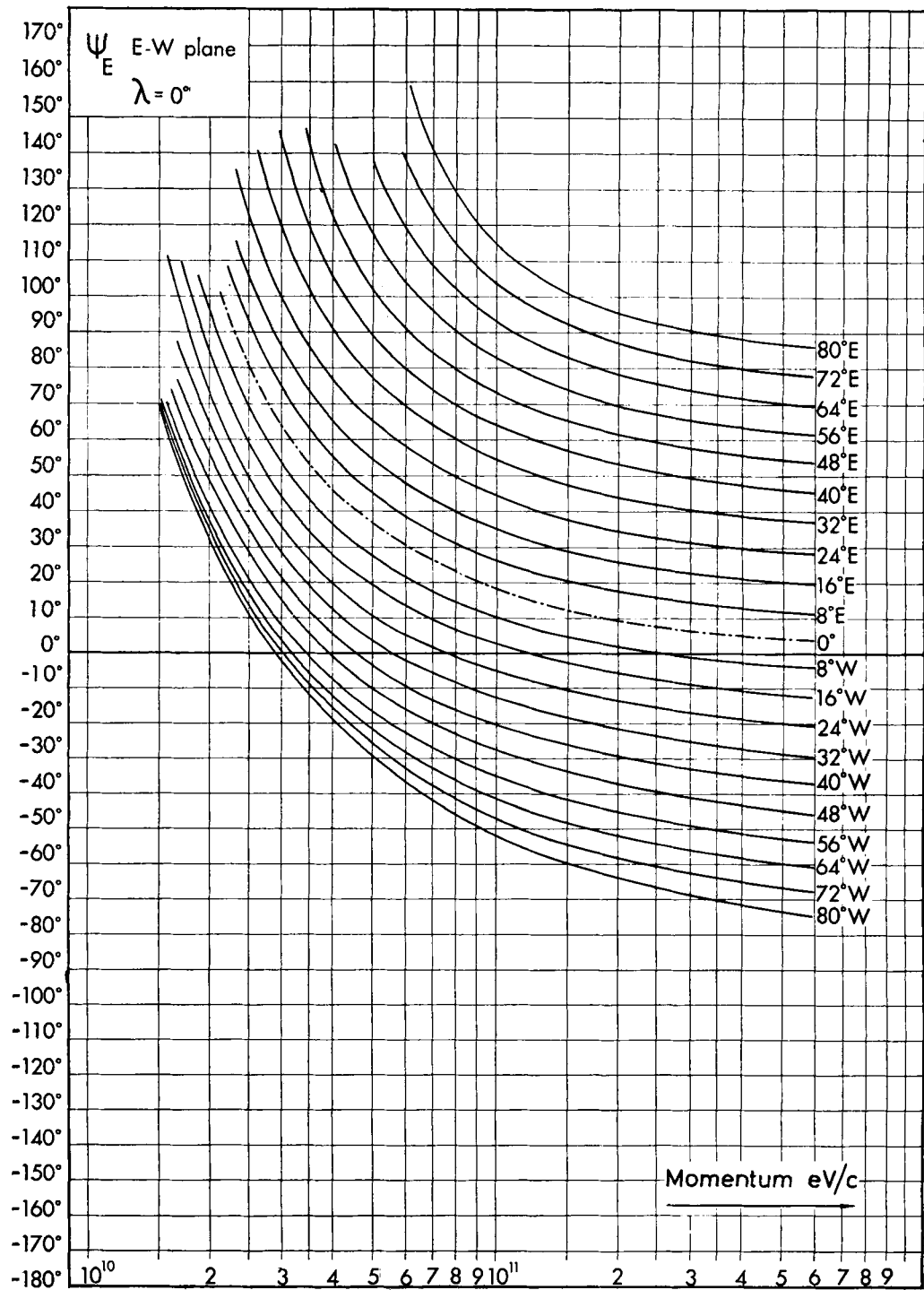


Diagram 37