$$\Pi^J_{l\,\frac{1}{2}} = [2J + 1 + 8(J - l)(IS)][2(2l + 1)]^{-1}.$$

The projection operator on the state with given L, S and J of the form

$$P^J_{LS}\psi^{j\mu}_{ls} = \delta_{Jj}\delta_{Ll}\delta_{Ss}\psi^{J\mu}_{LS}$$

is an integral operator with kernel

$$\sum_M \psi^{JM}_{LS}(\xi, \vartheta, \varphi)\,\psi^{JM}_{LS}(\xi', \vartheta', \varphi').$$

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Photodisintegration of Neon Nuclei

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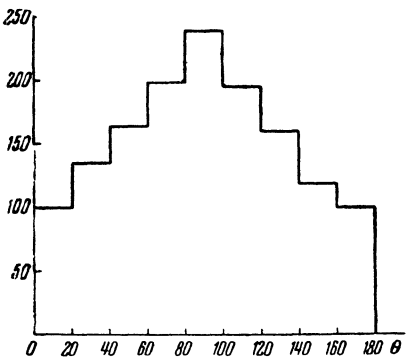
A NATURAL mixture of neon isotopes contained in a fast acting Wilson cloud chamber under a pressure of 1.4 atm, was irradiated by γ-rays from the synchrotron up a to maximum energy of 80 Mev. The Wilson chamber was in a magnetic field of 5750 Oersted.

The following reactions were observed (a total of 719 cases): (γp), (γpn), $(\gamma 2p)$, $(\gamma 2\alpha)$, $(\gamma\alpha p)$ and $(\gamma 5\alpha)$. Reactions (γp) and (γpn) were distinguished by the pulse size and direction of the recoil nucleons, reactions (γp) and $(\gamma\alpha)$ were distinguished by the ionization density and the tracks of the recoil nuclei.

The orientation and length of tracks were determined by the reprojection method. The angular distribution (in the laboratory system of coordinates) of photoprotons from 1 to 15 Mev was studied. The dependence of the relative number of protons per unit solid angle on the angle θ between the direction of proton flight and the axis of the γ-ray beam is shown in the Figure in diagram form in 20° intervals. The angular distribution is well described by



a formula of the form $a + b\sin^2\theta$, where $b/a \approx 2.5$. The number of observed cases for the separate types of reactions is as follows:

Type of disintegration:	(γp)	(γpn)	$(\gamma 2p)$	$(\gamma 2\alpha)$	$(\gamma\alpha p)$	$(\gamma 5\alpha)$
Number of cases:	352	137	64	21	143	2

It should be noted that there is a substantial difference in the angular distributions of photoprotons for argon[1] and neon. Since the neon and argon nuclei are even-even, this difference cannot be due to the difference in nuclear spins but is apparently associated with the difference in the shell structures of the nuclei. The integral (γp) reaction cross section for neon determined relative to the (γp) reaction cross section for helium[2] turned out to be 0.16 ± 0.08 Mev-bn.

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