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## Recent Work

### Title

Summary of Measurements of Total Cross Sections of Nuclei for 40 Mev to 280 Mev Neutrons

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SUMMARY OF MEASUREMENTS OF TOTAL CROSS SECTIONS OF NUCLEI

FOR 40 MEV TO 280 MEV NEUTRONS - 7/6/49

C. Leith

Berkeley, California

SUMMARY OF MEASUREMENTS OF TOTAL CROSS SECTIONS OF NUCLEI  
FOR 40 MEV TO 280 MEV NEUTRONS - 7/6/49

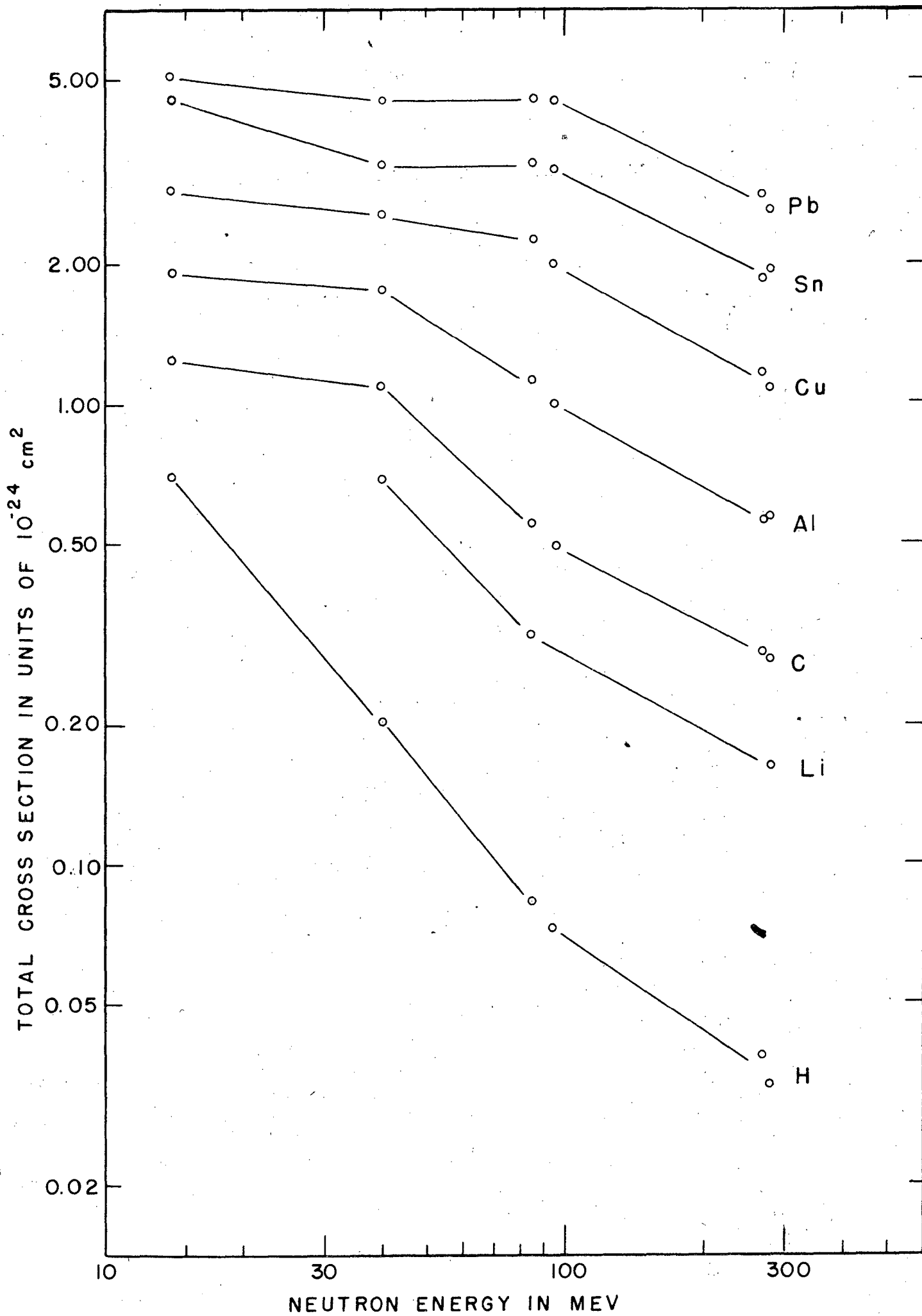
Experiment	Neutron Source	Neutron Detector	Mean Energy in Mev	Spread in Mev
I. Hildebrand and Leith Bull. A.P.S. <u>24</u> No. 6 (1949)	Stripping in $\frac{1}{2}$ " Be of 80 Mev deuterons	$C^{12}(n,2n)C^{11}$	$40 \pm 3$	$\pm 8$
II. Cook, McMillan, Peterson and Sewell Phys. Rev. <u>75</u> , 7 (1949)	Stripping in $\frac{1}{2}$ " Be of 180 Mev deuterons	$C^{12}(n,2n)C^{11}$	$85 \pm 5$	$\pm 14$
III. DeJuren and Knable To be published in Phys. Rev.	Stripping in $\frac{1}{2}$ " Be of 180 Mev deuterons	Bi fission	$95 \pm 5$	$\pm 12$
IV. DeJuren Bull. A.P.S. <u>24</u> No. 6 (1949)	340 Mev protons on 2" Be	Bi fission	$270 \pm 20$	$\pm 40$
V. Fox, Leith, McKenzie and Wouters Bull. A.P.S. <u>24</u> No. 6 (1949)	340 Mev protons on 2" Be	$15^\circ$ recoil protons of $> 250$ Mev from $CH_2$	$280 \pm 20$	$\pm 40$

TOTAL CROSS SECTIONS  
in units of  $10^{-24}\text{cm}^2$

Element	Z	A	I 40 Mev	II 85 Mev	III 95 Mev	IV 270 Mev	V 280 Mev
H	1	1.008	0.202 $\pm$ 0.007	0.083 $\pm$ 0.004	0.073 $\pm$ 0.002	0.038 $\pm$ 0.002	0.033 $\pm$ 0.003
D	1	2.015	0.287 $\pm$ 0.014	0.117 $\pm$ 0.005	0.104 $\pm$ 0.004	0.059 $\pm$ 0.003	0.049 $\pm$ 0.005
Li	3	6.940	0.684 $\pm$ 0.011	0.314 $\pm$ 0.006			0.164 $\pm$ 0.007
Be	4	9.02	0.853 $\pm$ 0.010	0.431 $\pm$ 0.008	0.396 $\pm$ 0.004	0.229 $\pm$ 0.003	0.225 $\pm$ 0.004
C	6	12.01	1.092 $\pm$ 0.011	0.550 $\pm$ 0.011	0.497 $\pm$ 0.003	0.287 $\pm$ 0.005	0.279 $\pm$ 0.004
N	7	14.008		0.656 $\pm$ 0.021	0.570 $\pm$ 0.007		
O	8	16	1.353 $\pm$ 0.014	0.765 $\pm$ 0.020	0.663 $\pm$ 0.007		0.380 $\pm$ 0.008
Mg	12	24.32	1.67 $\pm$ 0.05	1.03 $\pm$ 0.02			
Al	13	26.97	1.75 $\pm$ 0.03	1.12 $\pm$ 0.02	0.993 $\pm$ 0.011	0.555 $\pm$ 0.008	0.566 $\pm$ 0.018
S	16	32.06	1.95 $\pm$ 0.07				
Cl	17	35.457	2.06 $\pm$ 0.06	1.38 $\pm$ 0.03	1.28 $\pm$ 0.02		
Fe	26	55.85	2.44 $\pm$ 0.03				
Ni	28	58.69	2.53 $\pm$ 0.05				
Cu	29	63.57	2.54 $\pm$ 0.02	2.22 $\pm$ 0.04	2.00 $\pm$ 0.02	1.15 $\pm$ 0.02	1.08 $\pm$ 0.02
Zn	30	65.38	2.54 $\pm$ 0.04	2.21 $\pm$ 0.04			
Mo	42	95.95	3.10 $\pm$ 0.05				
Ag	47	107.880	3.20 $\pm$ 0.04				

Total Cross Sections in units of  $10^{-24}\text{cm}^2$  (continued)

Element	Z	A	I 40 Mev	II 85 Mev	III 95 Mev	IV 270 Mev	V 280 Mev
Sn	50	118.70	$3.24 \pm 0.03$	$3.28 \pm 0.06$	$3.18 \pm 0.03$	$1.86 \pm 0.03$	$1.93 \pm 0.08$
Ta	73	180.88	$4.20 \pm 0.04$				
W	74	183.92	$4.30 \pm 0.06$				
Hg	80	200.61	$4.49 \pm 0.06$				
Pb	82	207.21	$4.44 \pm 0.05$	$4.53 \pm 0.09$	$4.48 \pm 0.03$	$2.81 \pm 0.03$	$2.61 \pm 0.06$
Bi	83	209.00	$4.58 \pm 0.06$				
Th	90	232.12	$5.33 \pm 0.16$				
U	92	238.07	$5.12 \pm 0.07$	$5.03 \pm 0.10$	$4.92 \pm 0.06$	$3.04 \pm 0.09$	$3.43 \pm 0.20$





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