^{20}Ne(n,α)   **1971Ka18**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. G. Sheu, J. H. Kelley, J. Purcell	ENSDF	5-Aug-2021

1946Gr08: ^{20}Ne(n,α), E=2.5 MeV; measured products, ^{17}O deduced σ, σ(E). Q=-0.6 MeV and $\sigma\approx0.005\times10^{-24}$ cm^2.

1951Jo22: ^{20}Ne(n,α), E=1.8-3.3 MeV; measured products, ^{17}O deduced σ, σ(E).

1959Be66: ^{20}Ne(n,α), E=2.8-7.3 MeV; measured cross section for the reaction. Disintegrations were observed leaving ^{17}O in the ground state and in the first three excited states.

1966Ce03: ^{20}Ne(n,α), E=14.2 MeV; measured $\sigma(E_\alpha,\theta)$. Natural target.

1966Mc14: ^{20}Ne(n,α), E=14.1 MeV; measured $\sigma(E_\alpha,\alpha)$. Natural targets.

1971Ka18: ^{20}Ne(n,α), E=14.3 MeV; measured $\sigma(E_\alpha)$. ^{17}O deduced levels.

1971Ba82: ^{20}Ne(n,α), E=14.1 MeV; measured σ, $\sigma(\theta)$.

1972Li30: ^{20}Ne(n,α), E=14.1 MeV; measured $\sigma(E_\alpha,\theta)$. ^{17}O deduced nuclear temperature.

2011KhZW: ^{20}Ne(n,α), E=4-7 MeV; measured E_α, I_α using digital spectrometer; deduced σ to low-lying states.

2012Kh05: ^{20}Ne(n,α), E<7.5 MeV; measured reaction products, E_α, I_α; deduced σ. Comparison with available data.

2012Kh06: ^{20}Ne(n,α), E=4-7 MeV; measured reaction products, E_α, I_α; deduced σ, resonance structures.

2012KhZZ: ^{20}Ne(n,α), E=4-7 MeV; measured reaction products; deduced σ to low-lying states.

Theory:

1983Sa30: ^{20}Ne(n,α), E=low; compiled target thermal distribution energy state to ground state thermonuclear reaction rate of reaction σ vs temperature. Statistical model.

1991Re10: ^{20}Ne(n,α), E=fast; compiled, evaluated reaction σ. Model calculations.

2005Ba78: ^{20}Ne(n,α), E$\approx$2500-5000 keV; analyzed σ; deduced parameters.

2017Sh51: ^{20}Ne(n,α), E=5 MeV; calculated shakeoff probability vs WIMP mass.

^{17}O Levels

Notes:

Angular distributions for the α-particles, the cross sections for the ^{20}Ne(n,α) reaction to many ^{17}O states have been studied at E=2.5-14.2 MeV (1946Gr08, 1959Be66, 1966Mc14, 1971Ba82, 1972Li30, 2011KhZW, 2012Kh05, 2012Kh06, 2012KhZZ).

E(level)[†]	Comments
0.83×10^3 *9*	
3.18×10^3 *12*	
3.90×10^3 *7*	
4.63×10^3 *12*	E(level): See also E_n=2.45 MeV corresponding to E_x=4720 keV (1951Jo22).
$5.214\times10^{3\ddagger}$	E(level): from E_n=2870 keV (1951Jo22).
$5.55\times10^{3\#}$ *10*	
$5.673\times10^{3\ddagger}$	E(level): from E_n=3260 keV (1951Jo22).
5.90×10^3 *10*	
$7.77\times10^{3\#}$ *15*	

[†] From (1971Ka18) except where noted.

[‡] From (1951Jo22).

[#] It is possible that each of the peaks from which the levels at 5.55 and 7.77 MeV were determined were actually combinations of two or more transitions, since they are rather broad (1971Ka18).