^{209}Bi(α,α'): giant resonance 1979Ha46

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. Chen # and F. G. Kondev	NDS 126, 373 (2015)	30-Sep-2013

1979Ha46, 1977Ha08: E=120 MeV α beam was produced from the KVI cyclotron. A target of 3.40 mg/cm^2 self-supporting ^{209}Bi, enriched to 99.99%, was used. Scattered α-particles were detected with a ΔE-E telescope of surface-barrier detectors, FWHM≈20 keV at Eα=5.5 MeV. Measured σ(E$_\alpha$,θ). Deduced resonances, isoscalar multipole strength from DWBA, collective analysis.

Others:

1997Fa19,1999Fa19: E=240 MeV α beam was produced from the Superconducting Cyclotron K500 of the Texas A&M University. A target of 4.5 mg/cm^2 Bi was used. Charged particles, fission fragments, neutrons, and γ-rays were detected in coincidence with α particles by six ΔE-E silicon telescopes, a 4π neutron ball calorimeter, and germanium detectors, respectively. Measured Eα, multiplicities. Deduced GDR parameters vs excitation energy.

1988Ch10: E=50.5 MeV α was from the 224 cm variable-energy cyclotron at Calcutta. α-particles were detected by two Si detectors. Measured σ(E$_\alpha$,θ). Deduced optical model parameters, deformation lengths. Nearside-Farside decomposition, DWBA analysis, Notch test.

^{209}Bi Levels

Data are from 1979Ha46. The same data are reported in 1978Va22, and a preliminary report is contained in 1977Ha08. Other: 1978ChYN.

For (α,α') data for low-lying excitations see "inelastic scattering".

E(level)	L	Comments
0.0		
10.9×10^3 *3*	2,2+4	Γ=2.7 MeV *3*, %EWSR=90-150 for L=2, or 50-150 (L=2) + 20-40 (L=4).
13.7×10^3 *3*	0,2,(4)	Γ=2.0 MeV *4*, %EWSR=80-120 (L=0), 30-50 (L=2), with maximum contribution from L=4 giving %EWSR=15-30.