Inelastic scattering:giant res 2006To10,1981Yo04,1975Ar16

Type	Author	History Citation	Literature Cutoff Date
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See also individual datasets by reaction for data on discrete levels from inelastic scattering measurements.

^{48}Ti(α,α'):

2006To10: E=240 MeV α beam was produced from the Texas A&M K500 super-conducting cyclotron. Target was 5.75 mg/cm^2 self-supporting ^{48}Ti (99.36% enriched). Scattered particles were momentum-analyzed with the multipole-dipole-multipole (MDM) spectrometer and detected with four proportional counters. Measured $\sigma(E_\alpha,\theta)$, strength distributions. Deduced centroid energies, widths, and fractions of energy weighted sum rule (EWSR) for isoscalar giant monopole (ISGMR), dipole (ISGDR) and quadrupole (ISGQR) resonances from DWBA analysis and Gaussian fits. Comparisons with theoretical predictions. Uncertainty in absolute cross section is about 10%.

1981Yo04: E=99, 117, 129 MeV α beams were produced from the Texas A&M cyclotron. Targets were >95% enriched self-supporting ^{48}Ti. Scattered particles were momentum-analyzed with an Enge split-pole magnetic spectrograph (FWHM≈300 keV) and detected with a proportional counter backed by a scintillator. Measured excitation energy and $\sigma(\theta=2^\circ$ to $7^\circ)$. Deduced centroid energies, and widths for isoscalar giant quadrupole (ISGQR) resonance from DWBA analysis. See also 1976Yo02.

^{48}Ti(^{3}He,^{3}He′):

1975Ar16: E=80 MeV ^{3}He beam was produced from the Grenoble cyclotron. Target was 3.08 mg/cm^2 self-supporting ^{48}Ti. Scattered particles were detected with two counter telescopes of surface-barrier Si detectors (ΔE) and Si(Li) (E) detectors. Measured $\sigma(\theta=8^\circ$ to $40^\circ)$. Identified structure at 17.7 MeV as E2 giant resonance.

^{48}Ti(d,d′):

2008Gr22: E=37 MeV deuteron beam was produced from the U240 isochronous cyclotron of the Institute for Nuclear Research, Kyiv. Target was 7.48 mg/cm^2 ^{48}Ti (73.8% enriched). Scattered particles were detected with two ΔE-E telescopes of a Si (ΔE) detector and a scintillation E detector. Measured $\sigma(\theta=16^\circ$ to $61^\circ)$.

All data are from 2006To10, unless otherwise noted.

^{48}Ti Levels

E(level)[†]	Γ[†]	%EWSR[†]	Comments
16.77×10^3[‡] *30*	7.27[‡] MeV *+22−24*	13[‡] *5*	E(level): from 16.75×10^3 *+31−28* in 2006To10 symmetrized. %EWSR: for E1 strength (ISGDR).
16.96×10^3 *16*	3.72 MeV *+60−46*	87 *11*	E(level): from 16.94×10^3 *+17−14* in 2006To10 symmetrized. Other: 16.2×10^3 *4* (1981Yo04), 18.0×10^3 *5* (1976Yo02), 17.7×10^3 *3* (1975Ar16). %EWSR: for E2 strength (ISGQR). Other: 4.5 MeV *5* (1981Yo04), 6.6 MeV *4* (1976Yo02). Centroid=17.47 MeV *20*, with %EWSR=83 *11* and width=7.62 MeV *12* from a single Gaussian fit to the E2 distribution (2006To10).
18.94×10^3 *32*	4.5 MeV *+13−2*	97 *13*	E(level): from 18.80×10^3 *+45−18* in 2006To10 symmetrized. %EWSR: for E0 strength (ISGMR); from 96 *+14−12* symmetrized. Centroid=18.73 MeV *23*, with %EWSR=84 *11* and width=8.28 MeV *5* from a single Gaussian fit to the E0 distribution (2006To10).
24.84×10^3 *27*	7.25 MeV *20*	43 *11*	%EWSR: for E3 strength (ISGOR).
28.9×10^3[‡] *8*	12.44[‡] MeV *+56−68*	43[‡] *9*	E(level): from 28.82×10^3 *+78−72* in 2006To10 symmetrized. %EWSR: for E1 strength (ISGDR).

[†] From moments of isoscalar multipoles determined from experimental strength distributions (2006To10), unless otherwise noted. EWSR=Energy−Weighted Sum Rule.

[‡] From a two-peak Gaussian fit to measured E1 strength distributions with quoted values of widths for FWHM. %EWSR=87 *11* and rms width=3.72MeV *+60−46* for the sum of two peaks with centroid energy=23.85×10^3 *+40−36*, from moments determined from experimental strength distributions (2019Bu26).