

^{141}Ho p decay (4.1 ms) 1998Da03,2001Se03,2008Ka16

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 154, 1 (2018)	20-Nov-2018

Parent: ^{141}Ho : $E=0.0$; $J^\pi=7/2^-$; $T_{1/2}=4.1$ ms I ; $Q(p)=1177$ eV; %p decay=100.0

^{141}Ho - $T_{1/2}$: From $E(p)$ (t) data (2008Ka16), same as the weighted average of 4.2 ms 4 (1998Da03), 3.9 ms 5 (1999Ry04) and 4.1 ms 1 (2005Bi24).

^{141}Ho - $Q(p)$: From $E(p)=1169$ eV (1998Da03).

^{141}Ho -Configuration= $\pi 7/2[523]$ Nilsson orbital is expected.

^{141}Ho -%p decay: %p decay is most likely 100%.

Dataset based on unevaluated XUNDL files compiled from 2008Ka16 by F.G. Kondev (ANL) and edited by B. Singh (McMaster); for older references, see also 2002So02 (p-decay evaluation).

1998Da03: First observation of ^{141}Ho p radioactivity, deformation deduced, $^{92}\text{Mo}(^{54}\text{Fe},p4n)$ $E=285$ -305 MeV (ANL).

1999Ry04: $^{92}\text{Mo}(^{54}\text{Fe},p4n)$, $E=315$ MeV, $\sigma \approx 13$ nb, recoil mass separator with PSAC/DDSD detectors at focal plane (ORNL).

2001Se03: $^{92}\text{Mo}(^{54}\text{Fe},p4n)$ in both direct and inverse kinematics, $E(\text{cm})=184$ -186 MeV. High statistics work (ANL).

2002RyZX,2003BaZZ,2005Bi24: $^{92}\text{Mo}(^{54}\text{Fe},p4n)$ $E=300$ MeV (ORNL).

2008Ka16: $^{92}\text{Mo}(^{54}\text{Fe},p4n)$, $E=300$ MeV. Reaction products were separated according to their mass-to-charge ratio, $A/Q=141/25$ and $141/26$ by the Recoil Mass Spectrometer (RMS). RMS-selected recoils were implanted into a 65-micron thick Double-sided Silicon Strip Detector (DSSD, FWHM=18-25 keV for $E(p)=1.17$ MeV) after passing through a thin-foil, position-sensitive Micro Channel Plate (MCP) detector and being slowed down to about 60-70 MeV by a degrader foil. The flight time through the separator was 2.2 μs . The production cross sections were evaluated to be 1.4 μb at 300 MeV for ^{141}Ho at the RMS transmission of 5%. For the ^{141}Ho measurement, the DSSD was backed with a 0.5-mm thick Si detector (FWHM=75 keV for $E(\alpha)=5.5$ MeV). The signals from all detectors were read by the Digital Gamma Finder (DGF) modules and analyzed on-board. The ^{141}Ho proton transition of 1169 keV 8 was used to establish the offset-free energy calibration of proton induced signals analyzed in the digital detection system. The energy spectra of emitted protons were obtained using time and pixel correlations with implanted ions, requiring an energy difference below 4% for the coincidence signals recorded in the front and back DSSD strips, and an anticoincidence condition with the Si detector behind the DSSD.

 ^{140}Dy Levels

$E(\text{level})^\dagger$	J^π^\dagger
0.0	0^+
202.20 20	(2^+)

† Adopted values.

Protons (^{140}Dy)

$E(p)$	$E(^{140}\text{Dy})$	$I(p)$	Comments
968 10	202.20	0.9 2	$E(p), I(p)$: A 0.97 MeV fine structure proton decay from ^{141}Ho g.s. to 2^+ level of g.s. band of
1169 8	0.0	99.1 2	$E(p)$: from 1998Da03. $I(p)$: from 2008Ka16.