IAEA 60 Years
Atoms for Peace and Development

IAEA – NDS data retrieval tools

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IAEA Nuclear Data Section

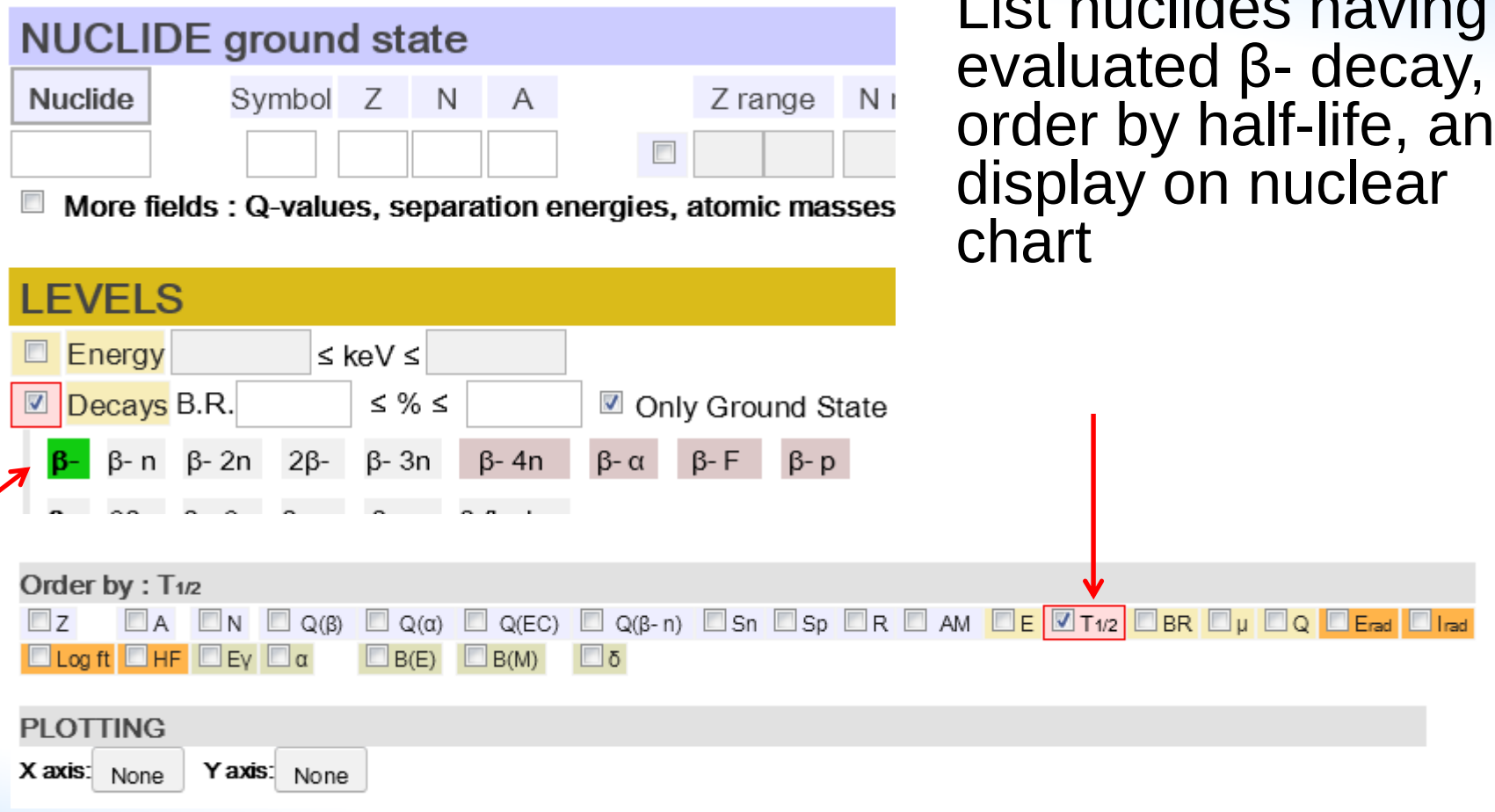
ICTP workshop on Nuclear Structure and Decay Data
Trieste
22 Aug / 2 Sep 2016

On www-nds.iaea.org

- Livechart
  /livechart
- Query tool
  /queryensdf
- Mass chains
  /relnsd/NdsEnsdf/masschain.html
- Actinides decay data
  /act_ddl
- Decay data portal (still under development)
  /relnsd/vcharthtml/VChartHTML_libs.html
- Mobile devices : Isotope Browser
  Google Play and ITunes app store

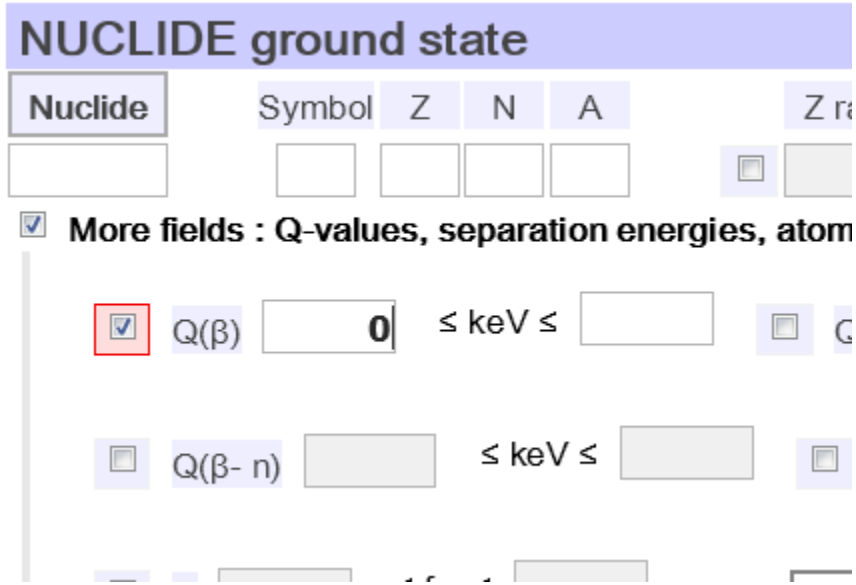
Query Tool exercises with solution

www-nds.iaea.org/queryensdf

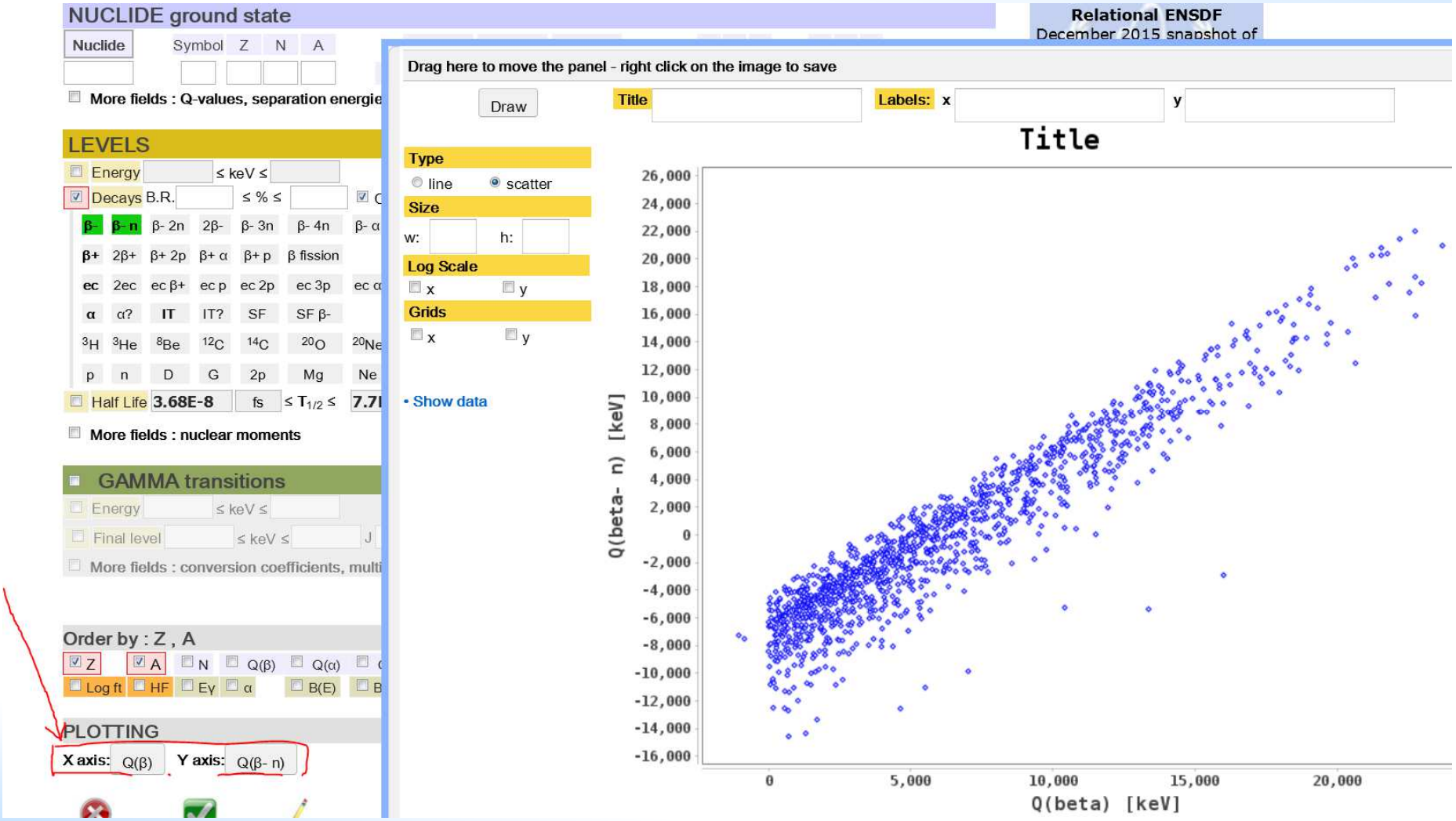


List nuclides having an evaluated β- decay, order by half-life, and display on nuclear chart

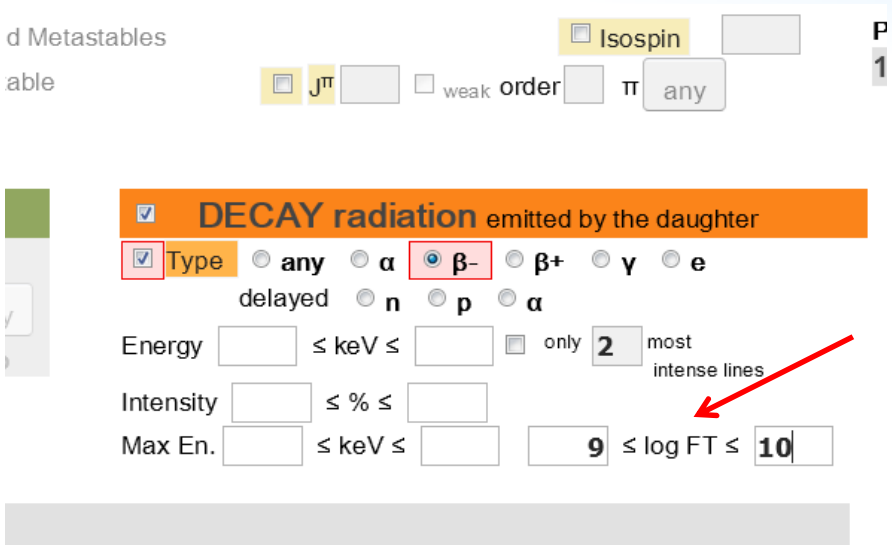
List nuclides that can theoretically β decay. Compare with the results before



Plot Q_{β} against $Q_{\beta- n}$ for those nuclides with evaluated β- and β- n decay



Find β- decaying nuclides which have β transitions with 9 ≤ log ft ≤ 10. Check ΔJ and Δπ values.



In the “Decay Radiation” tab check Jπ of parent and daughter, or download the CSV for further analysis

You requested: Radiation type β- 9 ≤ LogFT ≤ 10

Ground State | Levels | Gammas | Decay Radiation

510 rows retrieved

Comments

Click on a column header to open the guide

Uncertainty for numeric values refers to the last digits of the value: 12.1 23 means 12.1 ± 2.3

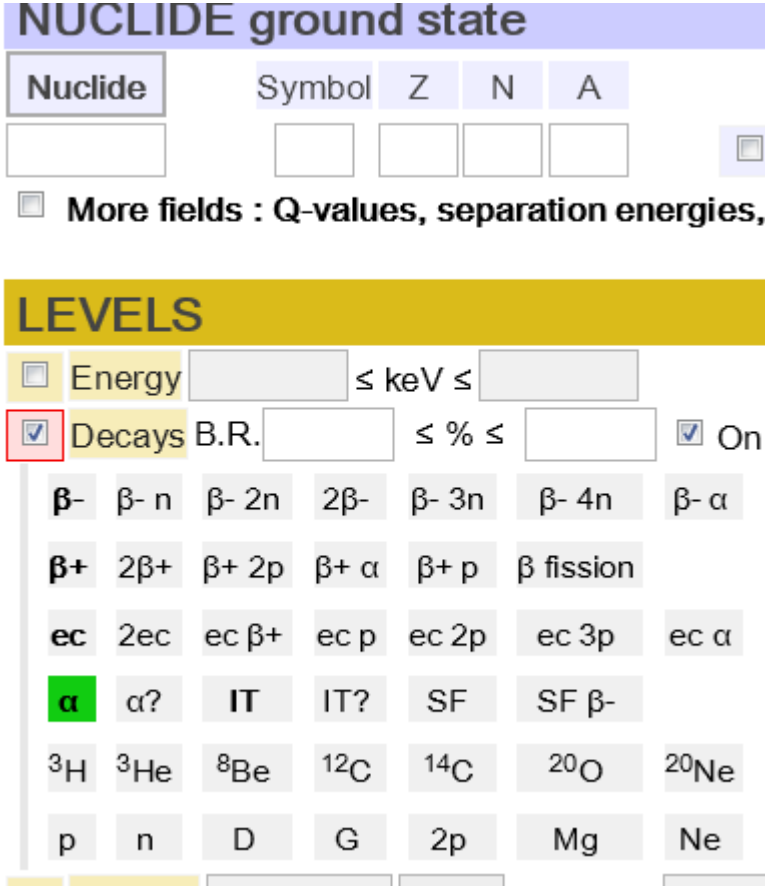
Data from: ENSDF apart Q from AME2012 Definitions and Sources ?

Click on a nuclide symbol to show the decay schema

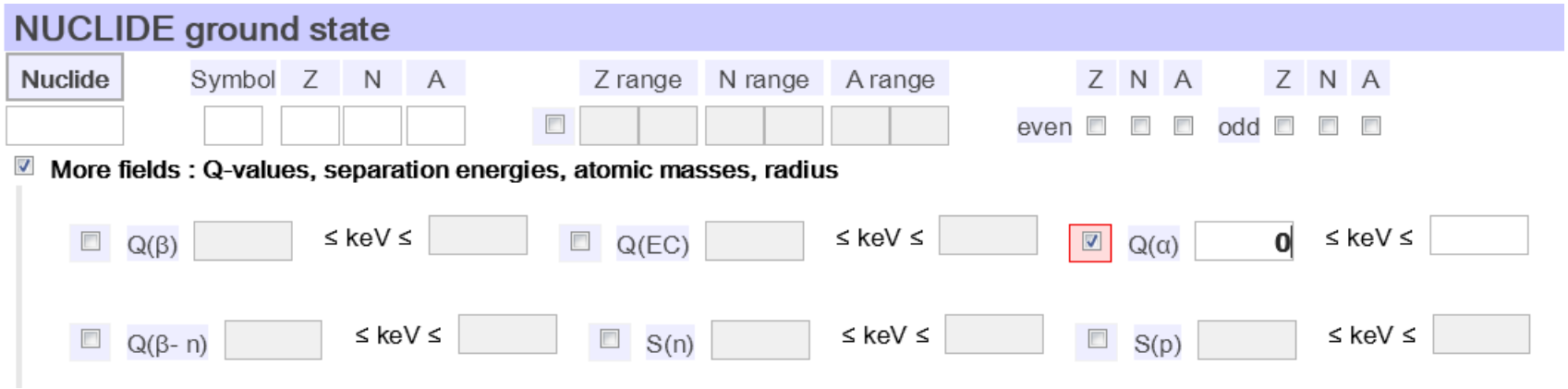
Beta - CSV

<E_{β^-}> [keV]	I_{β^-}(abs) [%]	Daughter level [keV]	J^π	$E_{\beta^-,max}$ [keV]	log*ft*	Transition type	Comments	Parent	$T_{1/2}$	E_x [keV]	Jp order	Deca
49.47	**100**	0	1+	156.475 *4*	9.040 *3*			$^{14}_{6}C_{8}$	5700 y *30*	0.0	0+	β- 100 %
1999.0 *13*	0.012 *4*	6049.4 *10*	0+	4270 *3*	9.96 *15*	1st forb. unique		^{16}	7.13 s *2*	0.0	2	β- 100 %

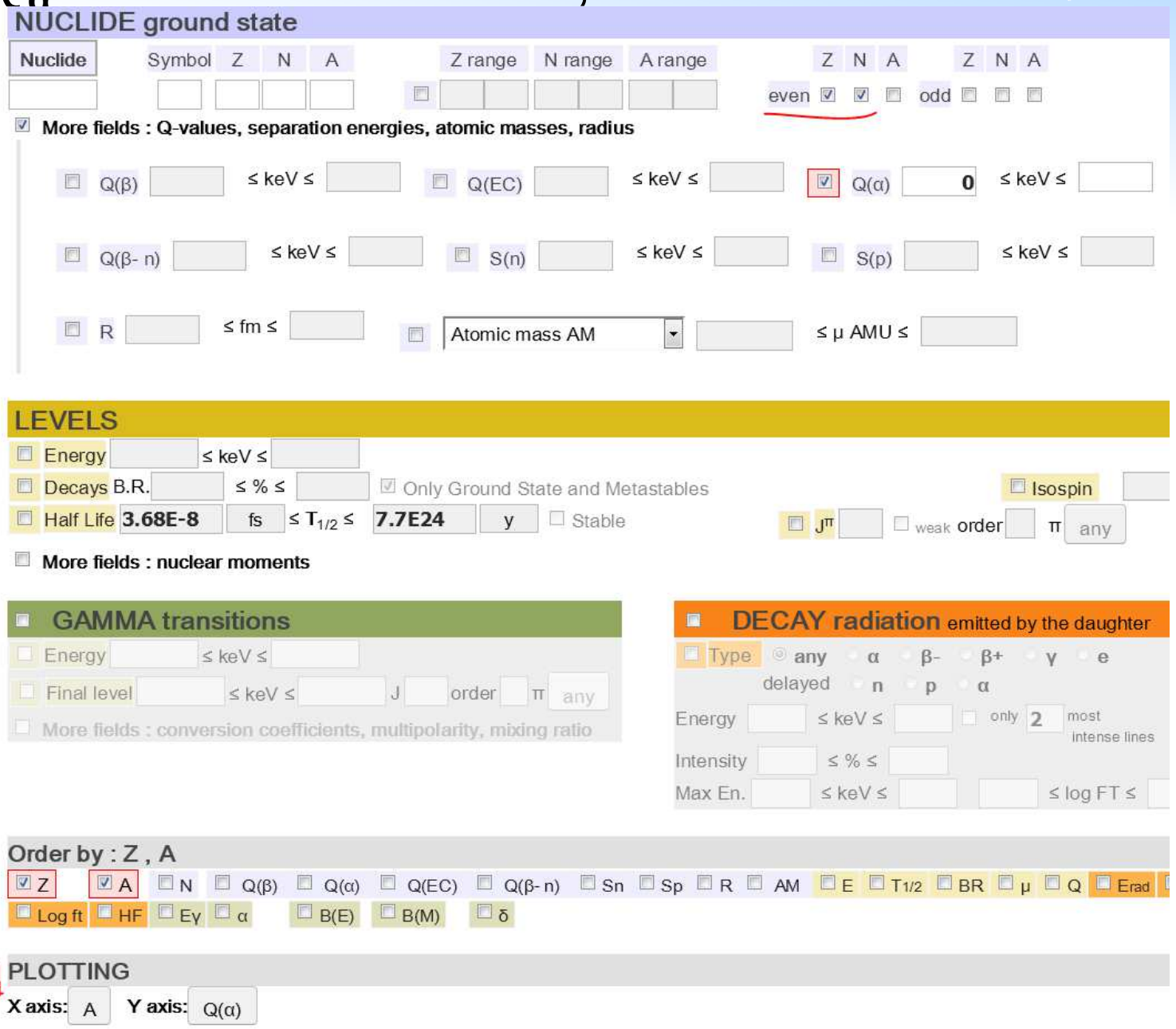
List nuclides with evaluated α decay and display on nuclear chart



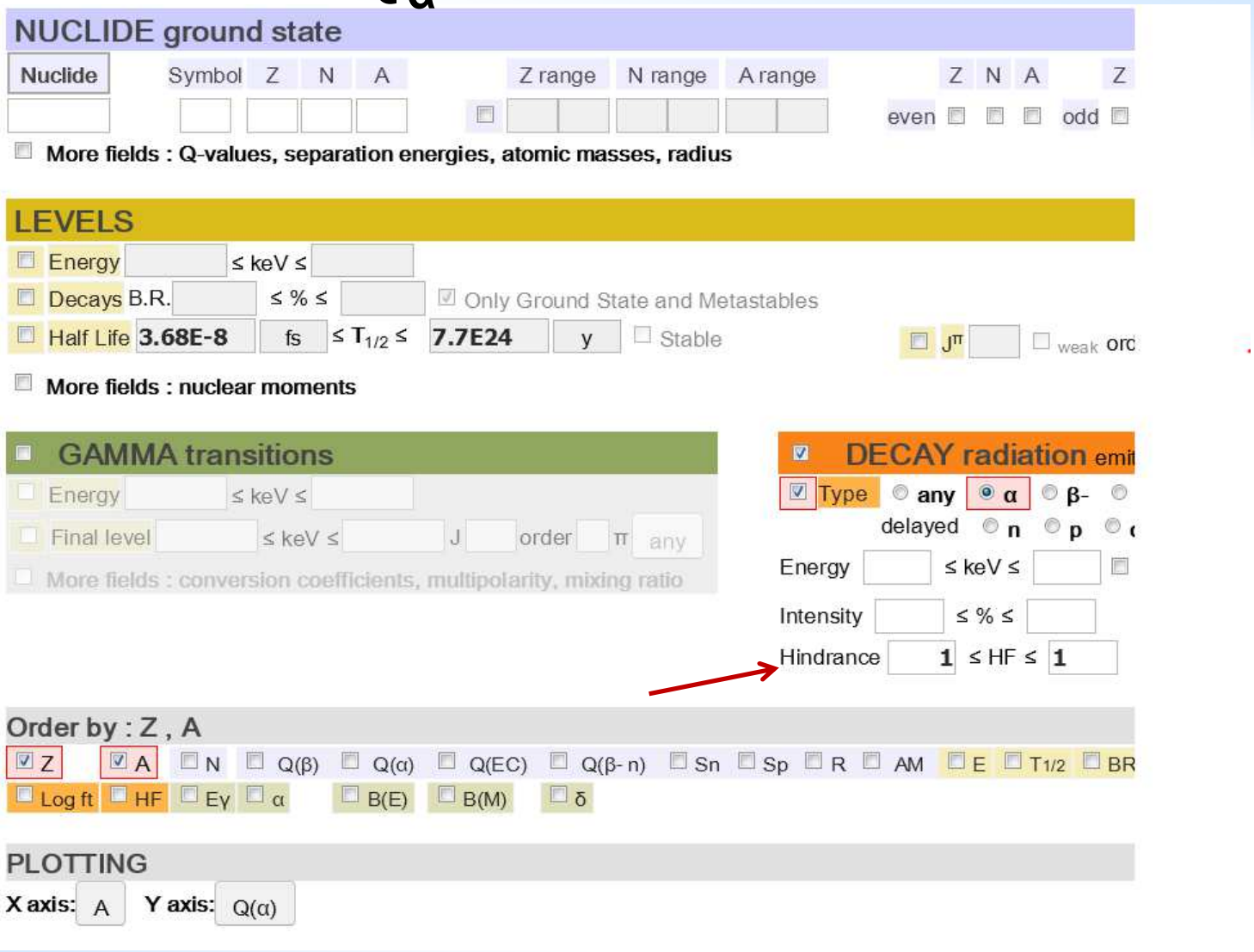
List nuclides that can theoretically α decay and compare with the retrieval before



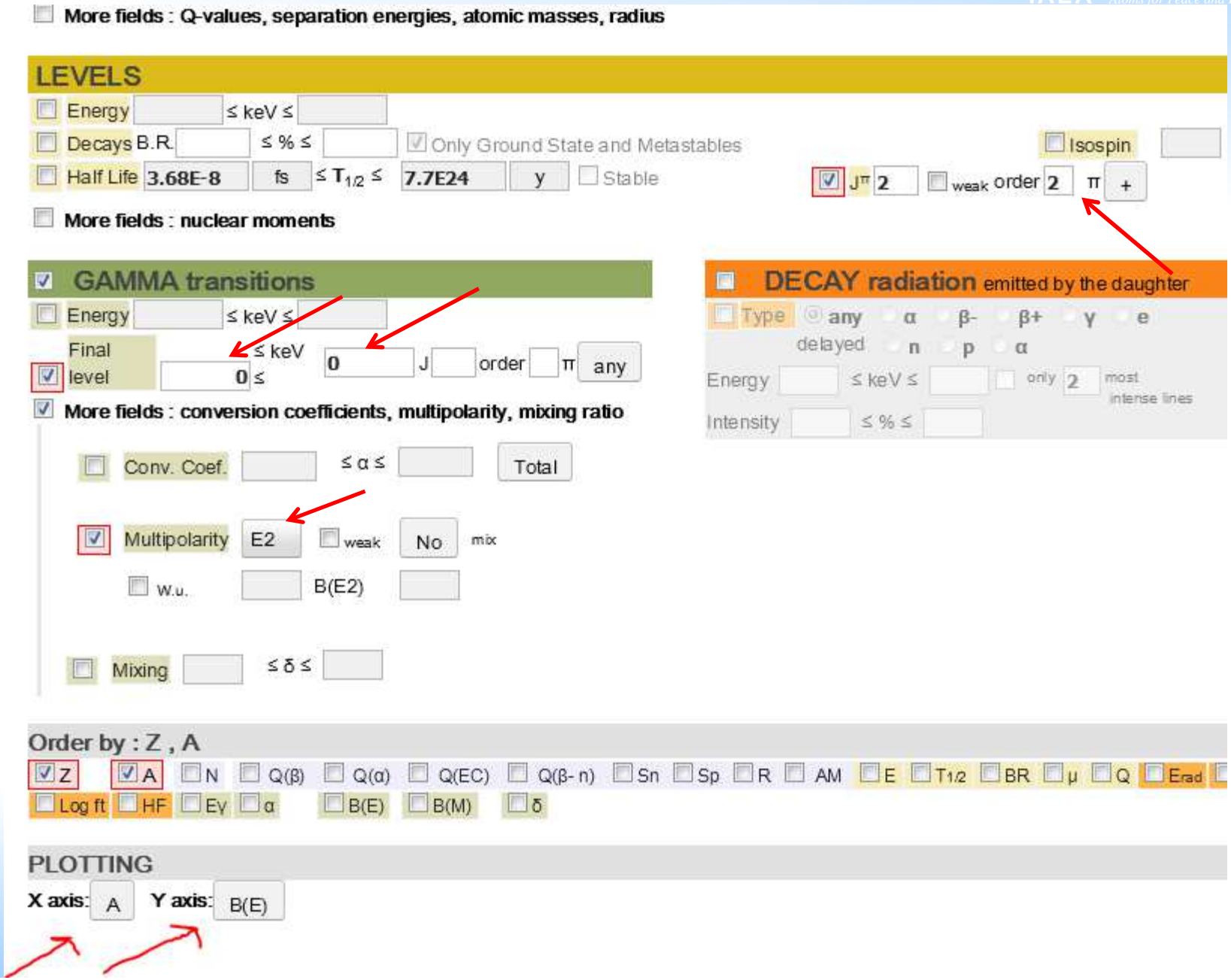
Plot Q_α vs A for even-even,



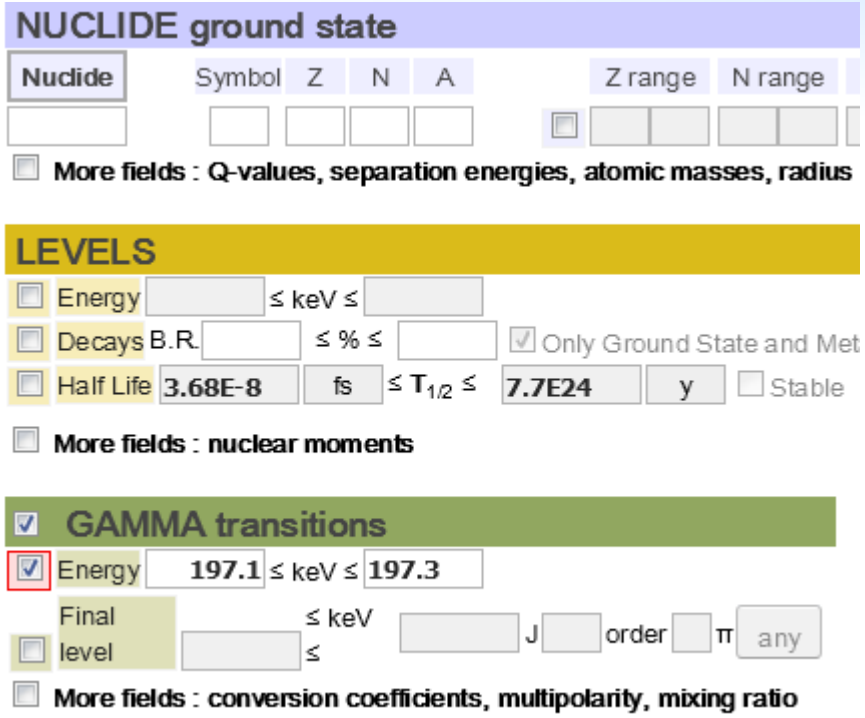
- Find α decaying nuclides with Hindrance Factor HF=1. Plot Q_α vs A.



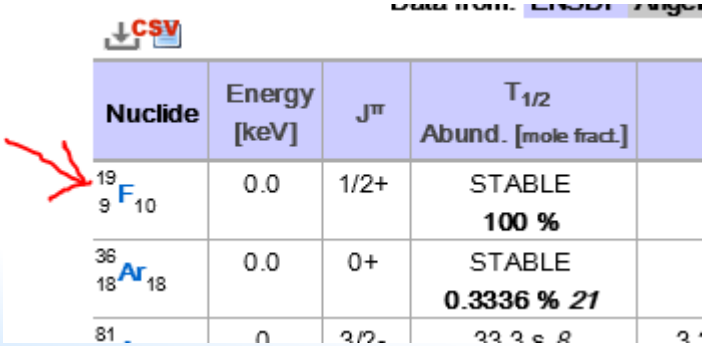
Plot $B(E_2)$ strengths of transitions from first excited 2^{+} states to the ground state vs A



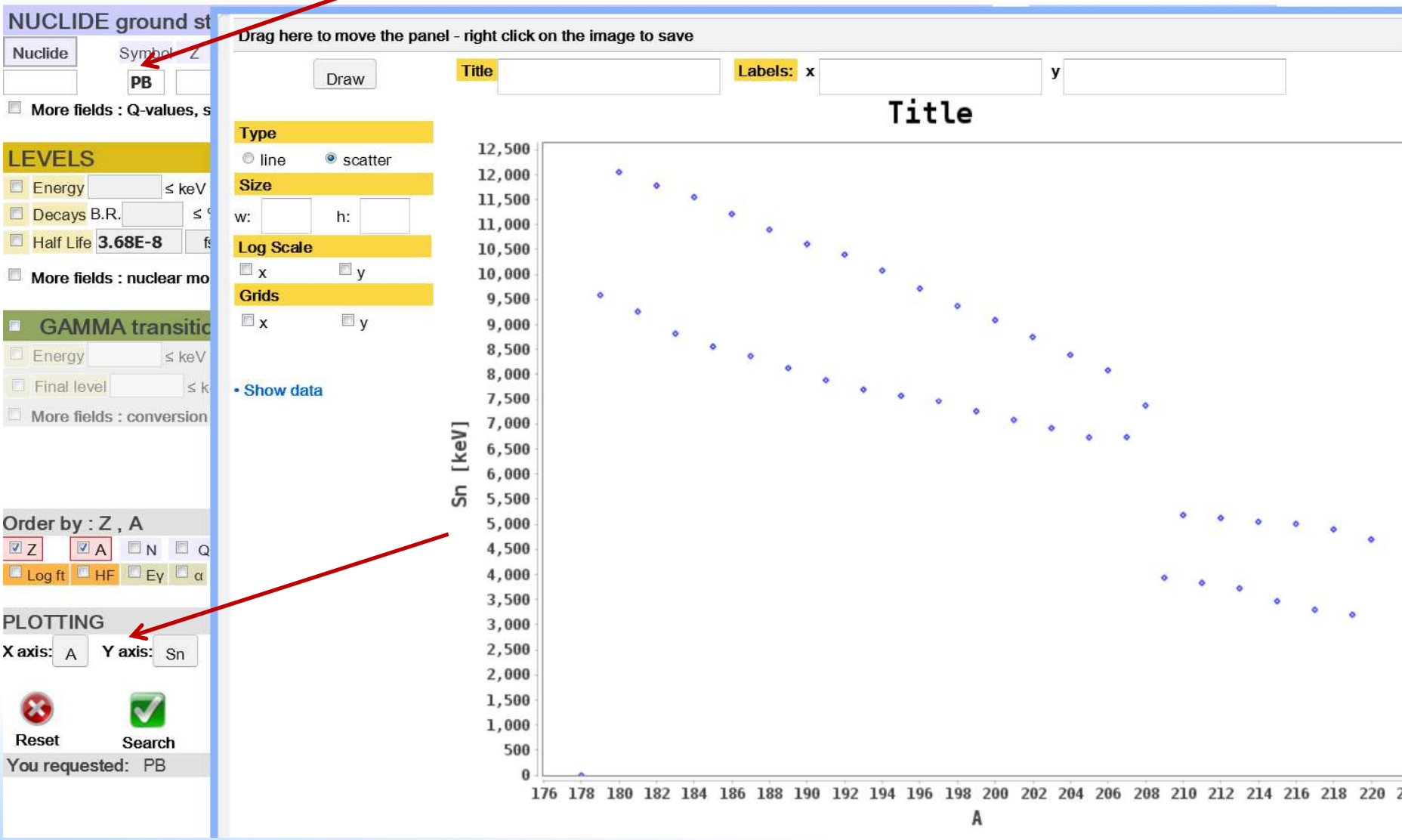
Find nuclides which emit γ rays of energy 197.2 keV through internal transitions and induced reactions.



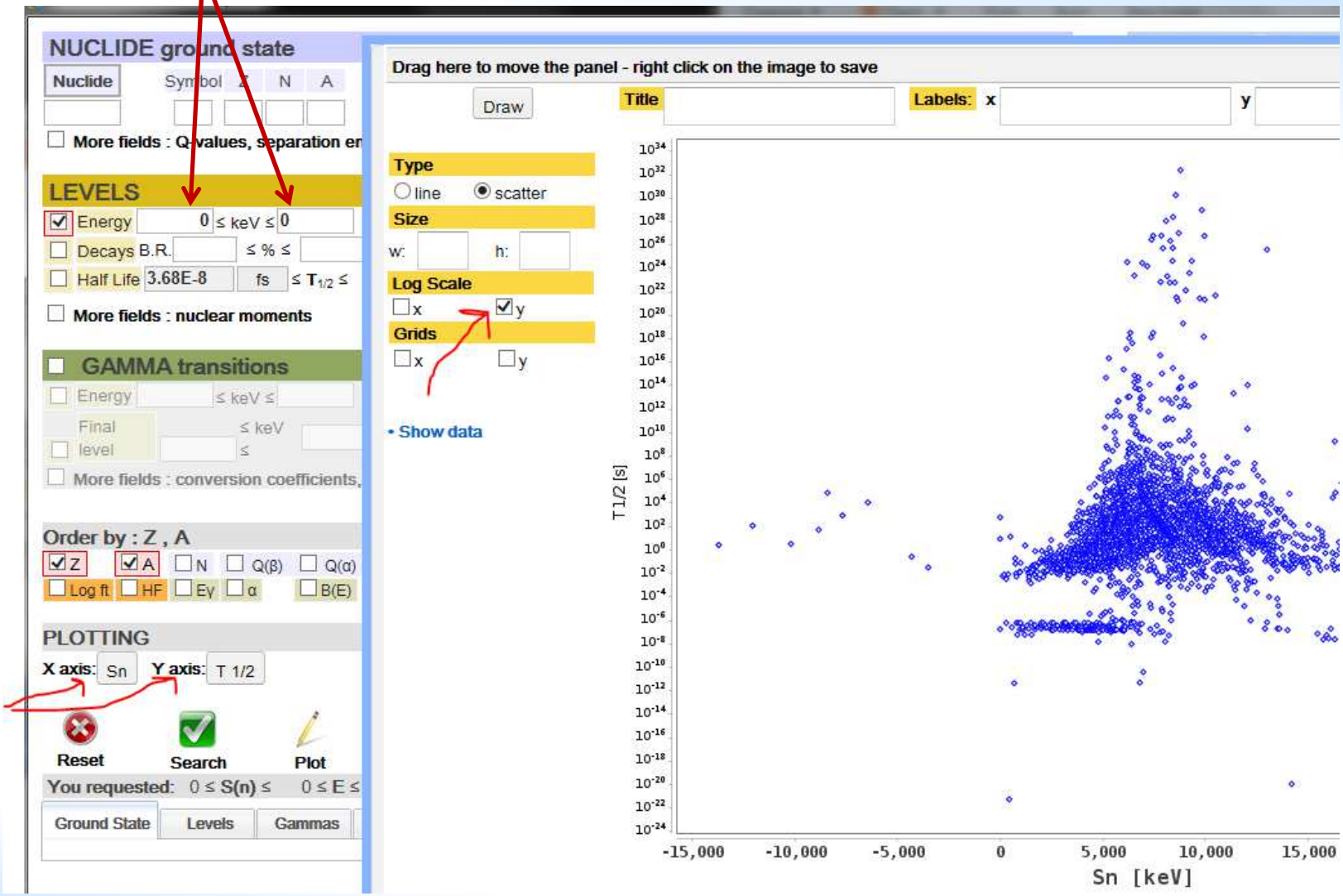
In the results, take 19-F and plot its level schema



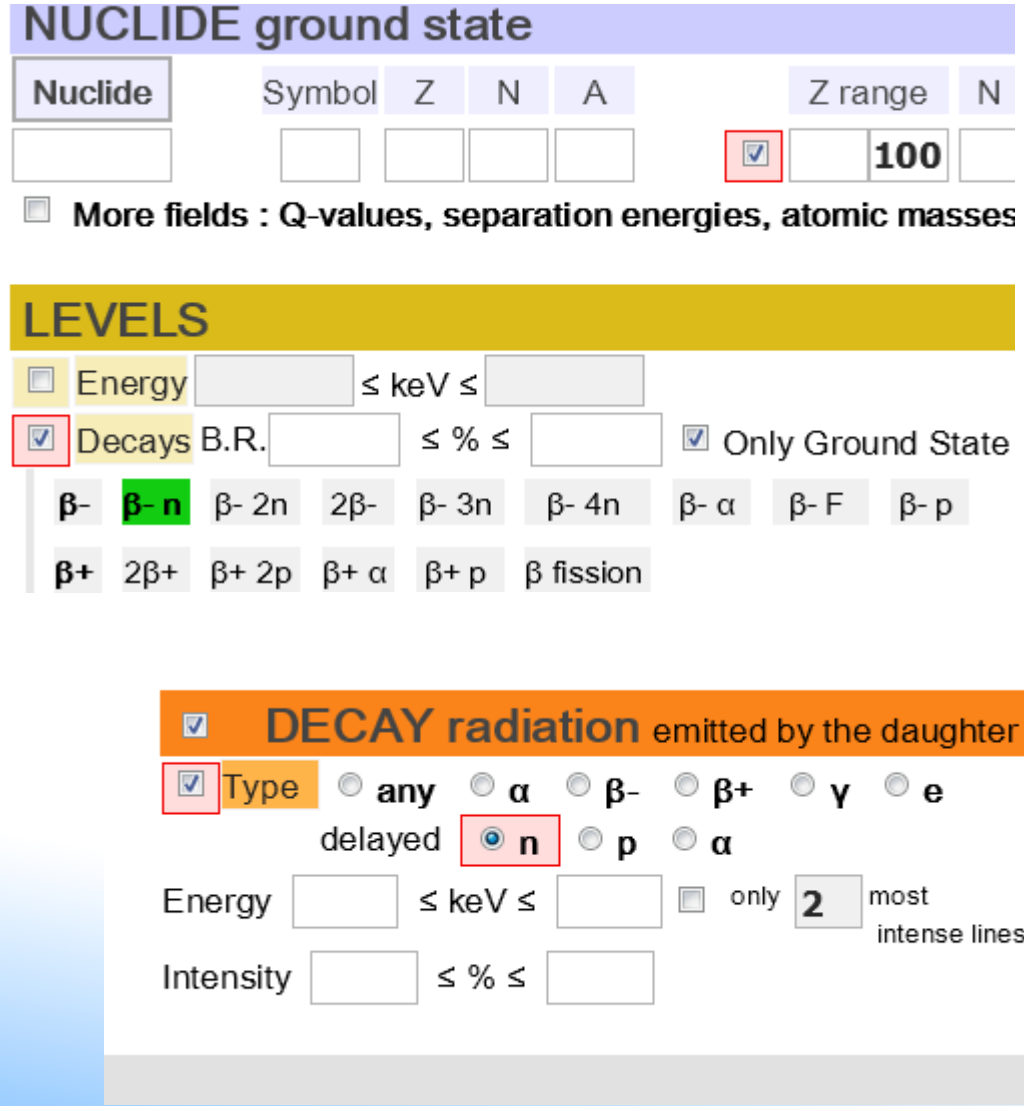
Plot S_n vs A for Led

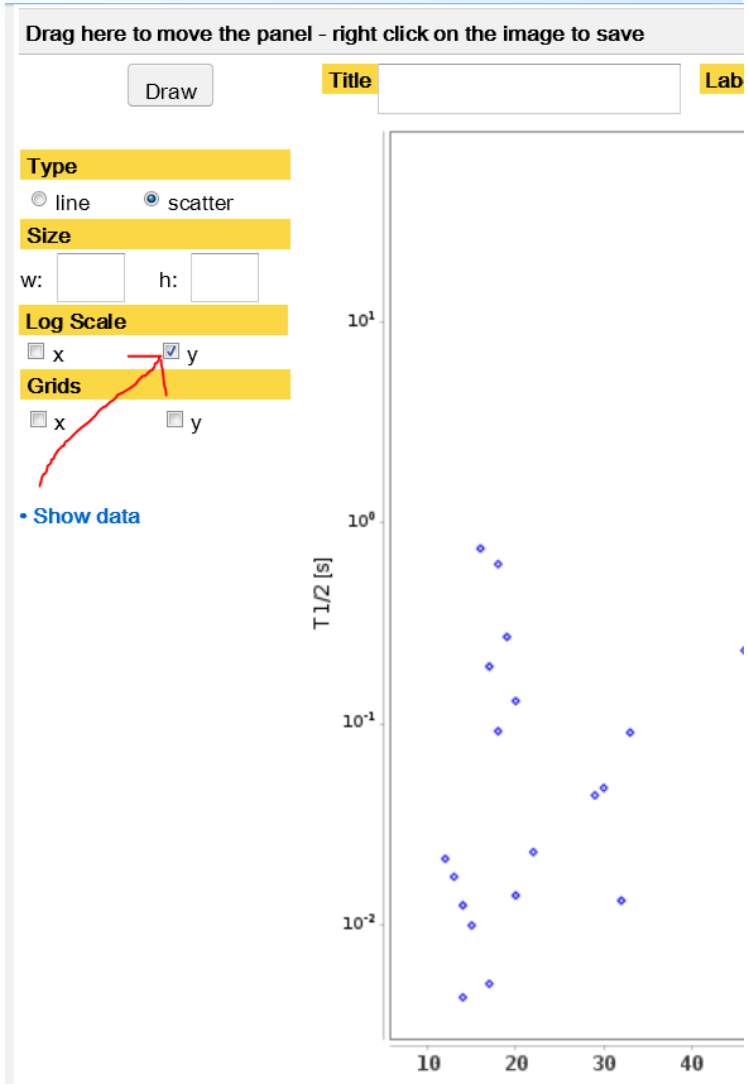


Plot ground states S_n vs $T_{½}$



Plot A vs $T_{½}$ for Z ≤ 100 levels decaying via β-n for which there is an evaluated n emission





- Plot A vs δ for E_2/M_1 transitions from J^{π} $2^{`+}$ to 2^+ for e-e nuclides having $60 \leq A \leq 150$.

In this section we consider the excited states as members of quasirotational bands. Figure 3 illustrates how the multiple-phonon levels may be decomposed into various intrinsic excitations

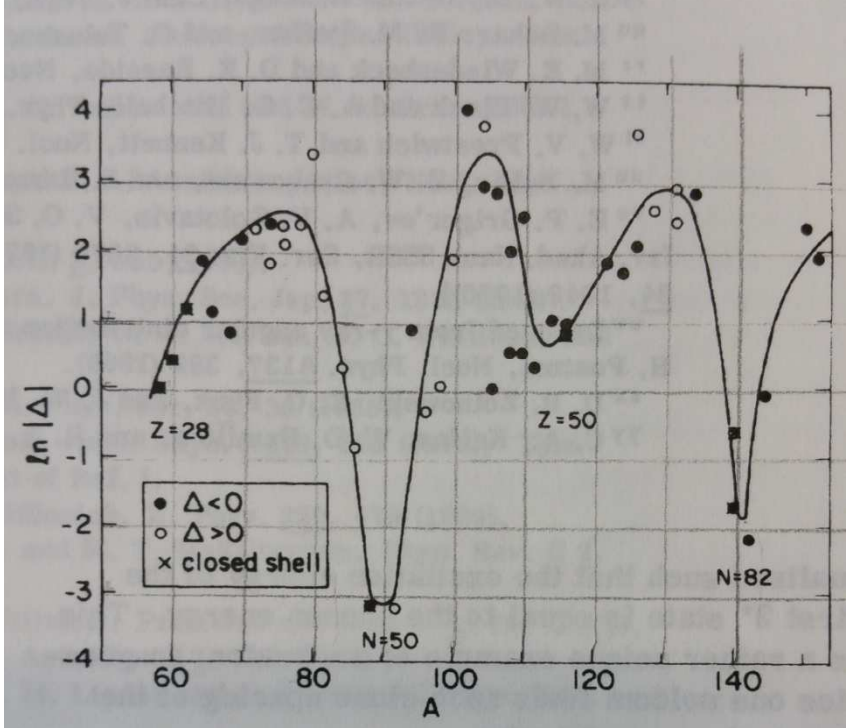
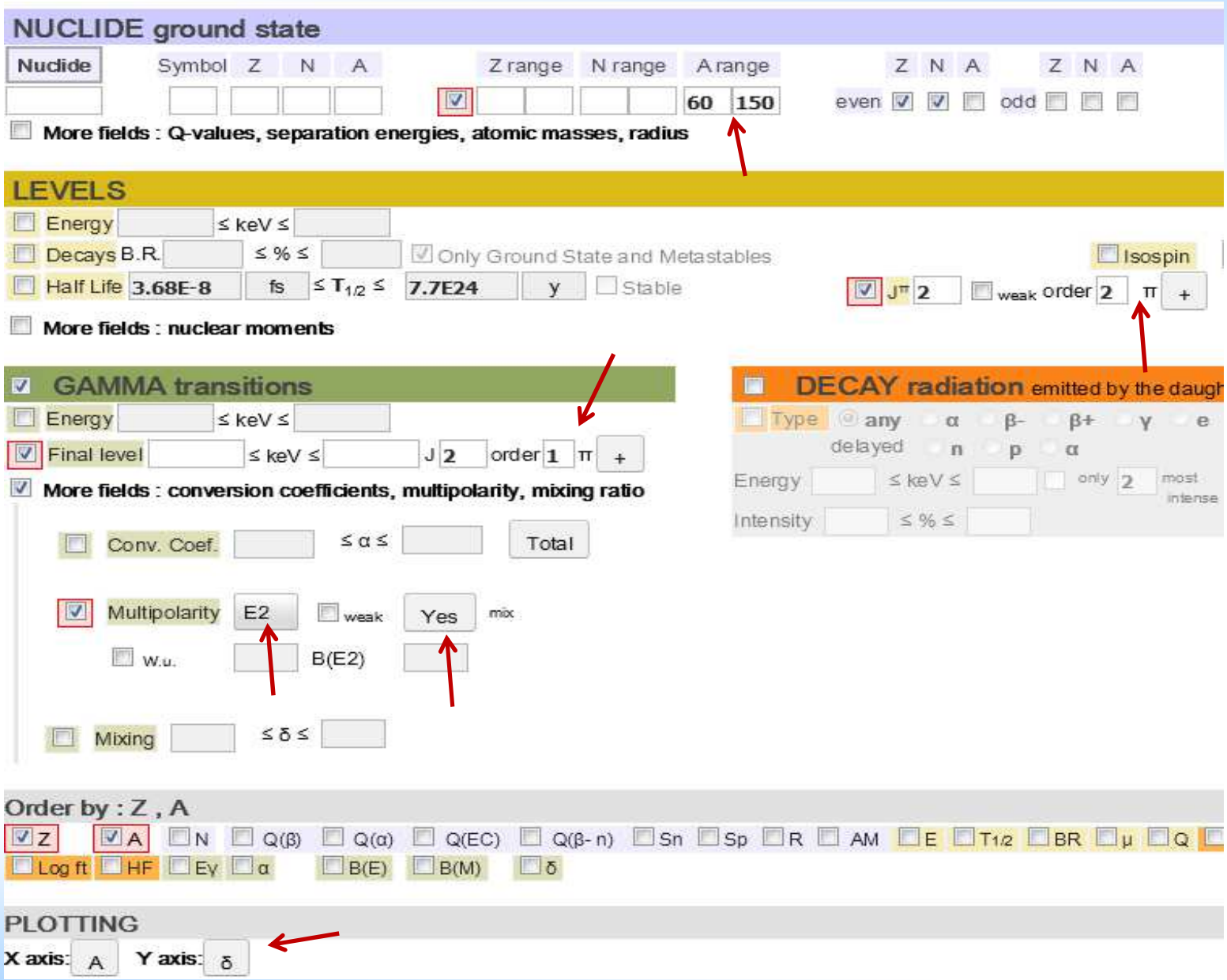


FIG. 2. $E2/M1$ mixing ratios of $2' \rightarrow 2$ transitions in even-even nuclei $60 \lesssim A \lesssim 150$. The solid curve indicates the trend of the measured values and shows pronounced minima in the vicinity of closed shells.

K.S. Krane, Phys.Rev. C 10 (1974) 1197
(Δ is a function of δ)

SEE NEXT PAGE

- Plot A vs δ for E_2/M_1 transitions from J^{π} 2^{+} to 2^{+} for e-e nuclides having $60 \leq A \leq 150$.

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Thank you!