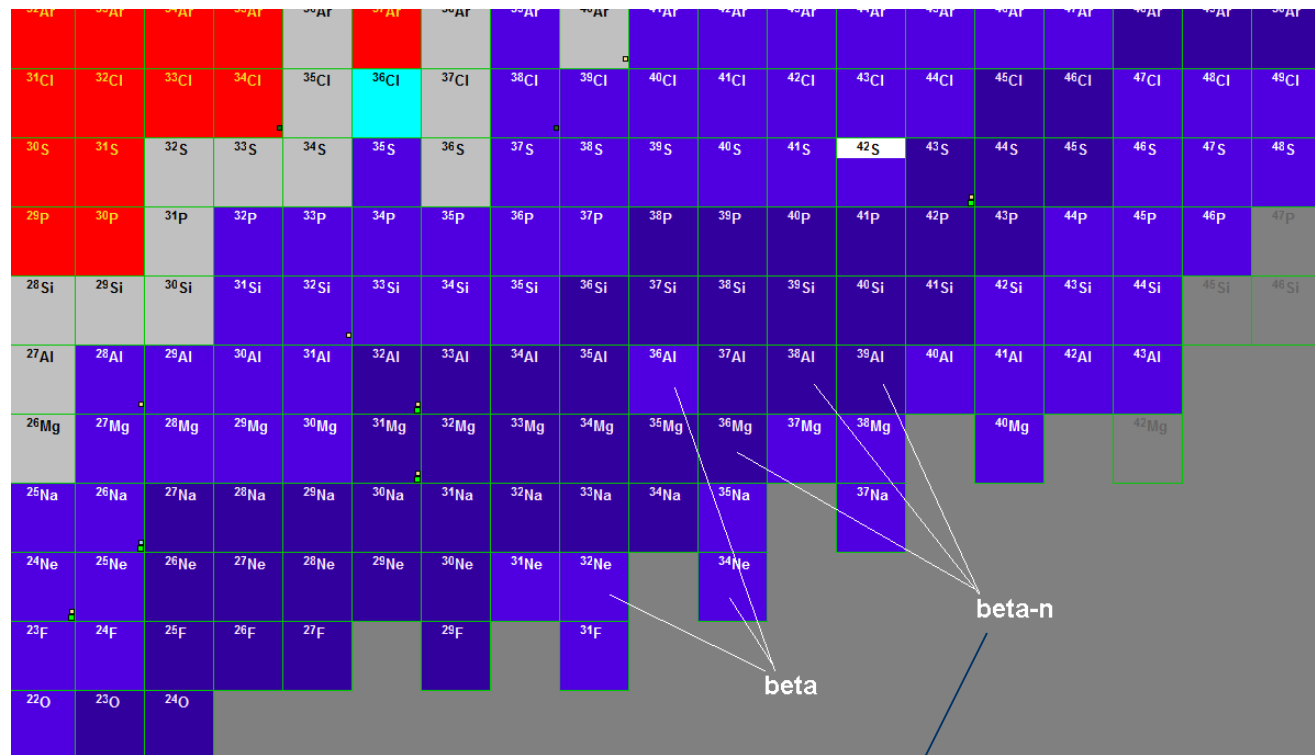


1. Beta-Delayed Neutron Emission is new decay mode in LISE⁺⁺
2. Beta-Delayed Proton Emission is new decay mode in LISE⁺⁺
3. Decay branching ratio database
4. Editor of Decay branching ratio database
5. Using the Decay branching ratio database in Radiation Residue calculations



Colors: Fonts and background

chose decay mode

Beta- and Beta-n decay

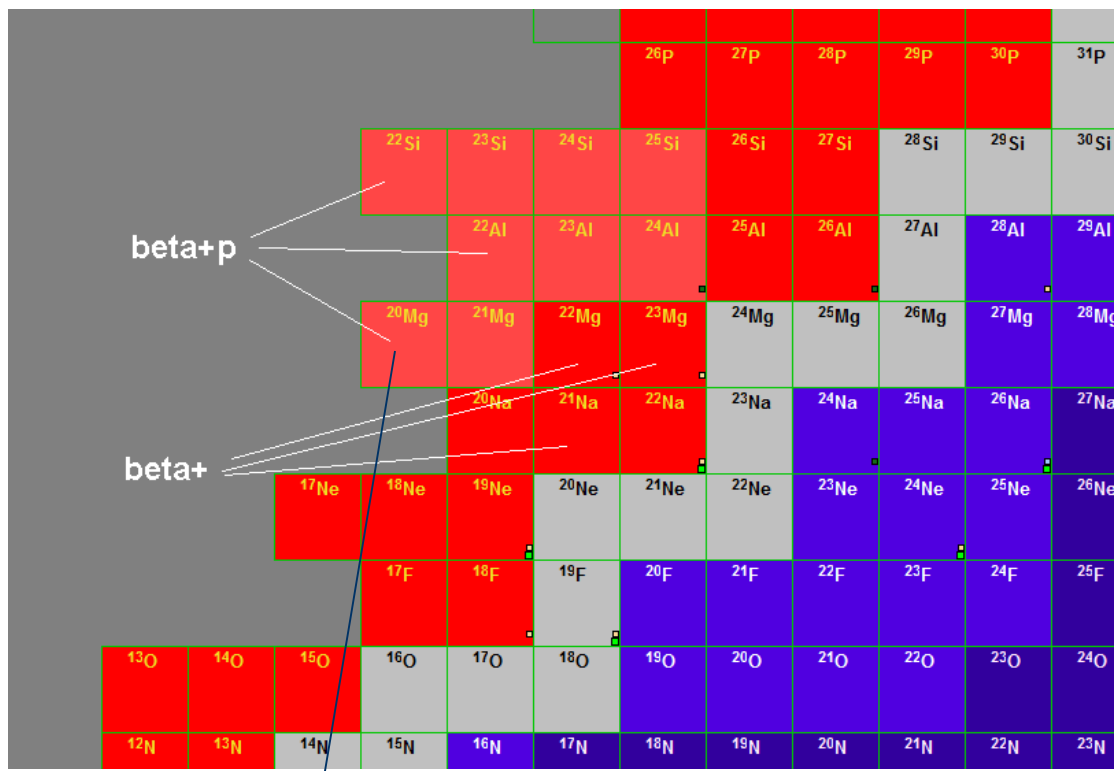
- Doesn't exist!
- Stable
- Beta+ decay
- Beta- decay
- Beta+ and Beta- decay
- Alpha decay
- Alpha and Beta+ decay
- Alpha and Beta- decay
- Proton decay
- Proton and Beta+ decay
- Proton and Alpha decay
- Spontaneous fission
- SF and Beta+ decay
- SF and Beta- decay
- SF and Alpha decay
- Unbound
- Unknown
- Beta- and Beta-n decay

statistics: 39Al

39Al	Beta- and Beta-n decay	Z=13, N=26)	Aluminum
AME2012 index	13026		error
Mass excess, [MeV]	20.9960		0.5030
Binding energy	283.6080		0.5030
Beta- decay	18.6756		0.5111
Beta+ decay	-21.2790		0.7185
S (2n)	4.9560		0.5170
S (2p)	46.7250		0.7860
Q (alpha)	-19.2690		0.7720
S (n)	3.2850		0.5620
S (p)	20.3670		0.7110
T 1/2	7.6 ms		1.6

Q-reaction (b+t -> f1+f2) -78.91 MeV (error=0.5154 MeV)

No user cross sections were found for this isotope



Colors: Fonts and background

chose decay mode

Beta- decay

- Doesn't exist!
- Stable
- Beta+ decay
- Beta- decay
- Beta+ and Beta- decay
- Alpha decay
- Alpha and Beta+ decay
- Alpha and Beta- decay
- Proton decay
- Proton and Beta+ decay
- Proton and Alpha decay
- Spontaneous fission
- SF and Beta+ decay
- SF and Beta- decay
- SF and Alpha decay
- Unbound
- Unknown
- Beta- and Beta-n decay
- Beta+ and Beta+p decay**

statistics: 20Mg

20Mg **Beta+ and Beta+p decay** (Z=12, N=8) Magnesium

AME2012 index	12008	error
Mass excess, [MeV]	17.5587	0.0270
Binding energy	134.4800	0.0270
Beta- decay	-24.5304	0.0272
Beta+ decay	10.7081	0.0270
S(2n)	*	*
S(2p)	2.3369	0.0270
Q(alpha)	-8.8524	0.0339
S(n)	22.3410	0.0568
S(p)	2.6597	0.0290
T 1/2	90 ms	6

Q-reaction (b+t -> f1+f2) -78.72 MeV (error=0.5037 MeV)

No user cross sections were found for this isotope

Name	Ext	Size
[.]		<DIR>
branching_ratio	lbase	3,411



File	Edit	Options	Help
2006	8.400000e-01		
3006	4.950000e-01		
3008	1.340000e-01		
4008	9.950000e-01		
4010	1.340000e-01		
5008	9.973400e-01		
5009	9.396000e-01		
5010	3.200000e-03		
5012	3.700000e-01		
5014	2.820000e-01		

P_n for $2 \leq Z \leq 28$ are taken from

Nuclear Data Sheets 128 (2015) 131-184

Evaluation of Beta-Delayed Neutron Emission Probabilities and Half-Lives for $Z = 2 - 28$

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We present an evaluation and compilation of β -delayed neutron probabilities and half-lives for nuclei in the region $Z = 2 - 28$ ($^3\text{He} - ^{80}\text{Ni}$). This article includes the recommended values of these quantities as well as a compiled list of experimental measurements for each nucleus in the region for which β -delayed neutron emission is possible. The literature cut-off for this work is August 15th, 2015. Some notable cases as well as new standards for β -delayed neutron measurements in this mass region are also discussed.

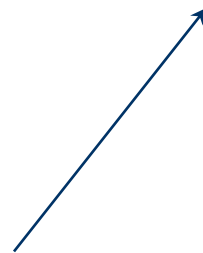
Other branching ratios and P_n for $38 \leq Z$ are taken from NNDC

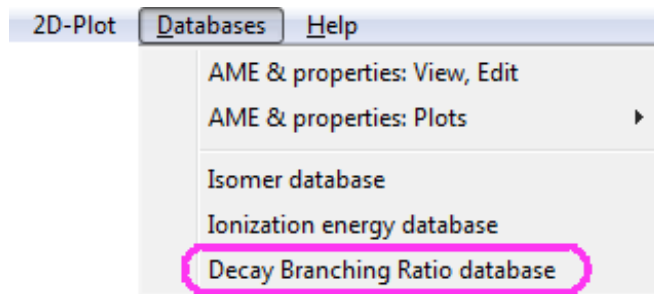
Ratios for higher Z will be entered soon.

www.nndc.bnl.gov/nudat2/wcbyz.jsp?z=38 workshop on isot

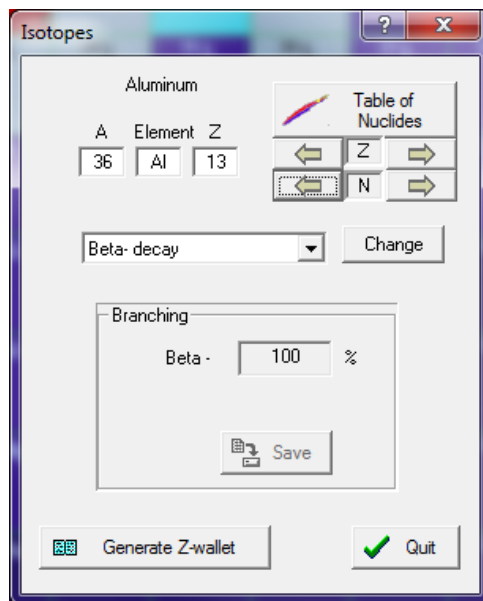
Results for Z=38

Nucleus	E(level) (MeV)	J π	Δ (MeV)	T _{1/2}	Abundance	Decay Modes
⁷³ ₃₈ Sr	0.0000		-31.9500 Syst	> 25 ms		ϵ : 100.00 % ϵp > 0.00 %
⁷⁴ ₃₈ Sr	0.0000	0+	-40.8270 Syst	> 1.2 μ S		ϵ
⁷⁵ ₃₈ Sr	0.0000	(3/2-)	-46.6186	88 ms 3		ϵ : 100.00 % ϵp : 5.20 %
⁷⁶ ₃₈ Sr	0.0000	0+	-54.2476	7.89 s 7		ϵ : 100.00 % ϵp : 3.4E-5 %
⁷⁷ ₃₈ Sr	0.0000	5/2+	-57.8034	9.0 s 2		ϵ : 100.00 % ϵp < 0.25 %
⁷⁸ ₃₈ Sr	0.0000	0+	-63.1739	160 s 8		ϵ : 100.00 %
⁷⁹ ₃₈ Sr	0.0000	3/2(-)	-65.4768	2.25 m 10		ϵ : 100.00 %
⁸⁰ ₃₈ Sr	0.0000	0+	-70.3114	106.3 m 15		ϵ : 100.00 %
⁸¹ ₃₈ Sr	0.0000	1/2-	-71.5281	22.3 m 4		ϵ : 100.00 %
⁸² ₃₈ Sr	0.0000	0+	-76.0099	25.34 d 2		ϵ : 100.00 %
⁸³ ₃₈ Sr	0.0000	7/2+	-76.7976	32.41 h 3		ϵ : 100.00 %
^{83m} ₃₈ Sr	0.2591	1/2-	-76.5385	4.95 s 12		IT : 100.00 %
⁸⁴ ₃₈ Sr	0.0000	0+	-80.6493	STABLE	0.56% 1	
⁸⁵ ₃₈ Sr	0.0000	9/2+	-81.1032	64.850 d 7		ϵ : 100.00 %
^{85m} ₃₈ Sr	0.2387	1/2-	-80.8645	67.63 m 4		IT : 86.60 % ϵ : 13.40 %
⁸⁶ ₃₈ Sr	0.0000	0+	-84.5232	STABLE	9.86% 1	
⁸⁷ ₃₈ Sr	0.0000	9/2+	-84.8800	STABLE	7.00% 1	
^{87m} ₃₈ Sr	0.3885	1/2-	-84.4915	2.815 h 12		IT : 99.70 % ϵ : 0.30 %

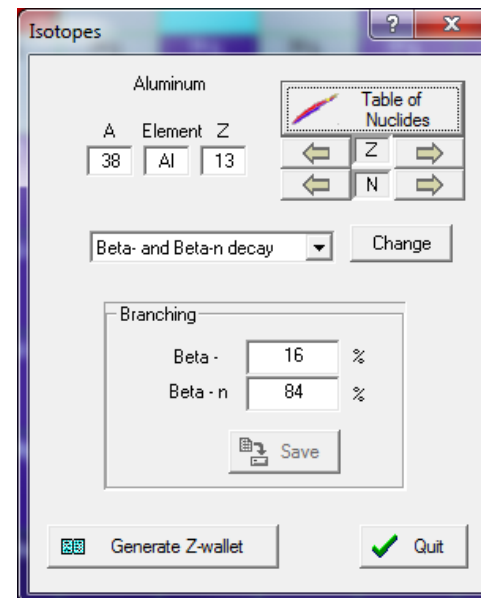


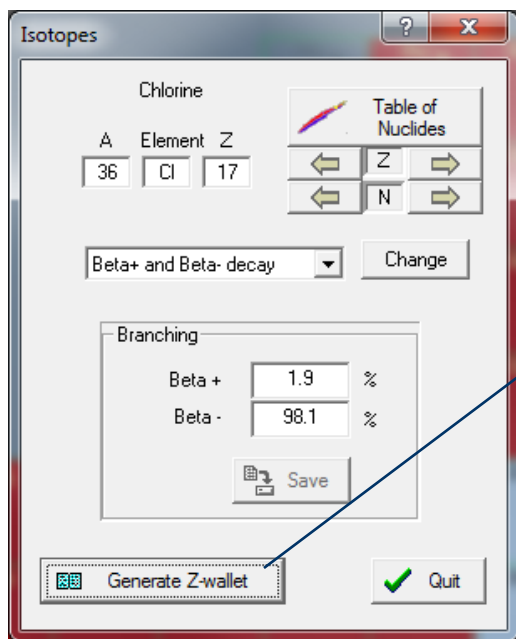
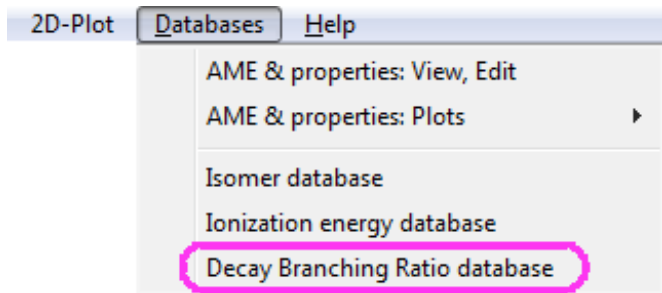


One branch decay



Two branches decay





Decay Branching Ratio

Z=17 (Chlorine)

A	decay1	branch. %	decay2	branch. %	T 1/2. s	Abundance. %
30	Unknown	.100...			8.430e-13	
31	Beta +	.100...			1.500e-01	
32	Beta +	.100...			2.980e-01	
33	Beta +	.100...			2.511e+00	
34	Beta +	.100...			1.527e+00	
35	Stable	.100...				75.760
36	Beta +	1.90	Beta -	98.10	9.503e+12	
37	Stable	.100...				24.240
38	Beta -	.100...			2.234e+03	
39	Beta -	.100...			3.372e+03	
40	Beta -	.100...			8.100e+01	
41	Beta -	.100...			3.840e+01	
42	Beta -	.100...			6.800e+00	
43	Beta -	.100...			3.130e+00	
44	Beta -	.100...			5.600e-01	
45	Beta -	76.00	Beta - n	24.00	4.130e-01	
46	Beta -	40.00	Beta - n	60.00	2.320e-01	
47	Beta -	.100...			1.010e-01	
48	Beta -	.100...			2.480e-02	
49	Beta -	.100...			1.890e-02	
50	Beta -	.100...			4.400e-03	
51	Beta -	.100...			6.180e-03	
53	Unknown	.100...			2.700e-03	
55	Unknown	.100...			8.600e-04	

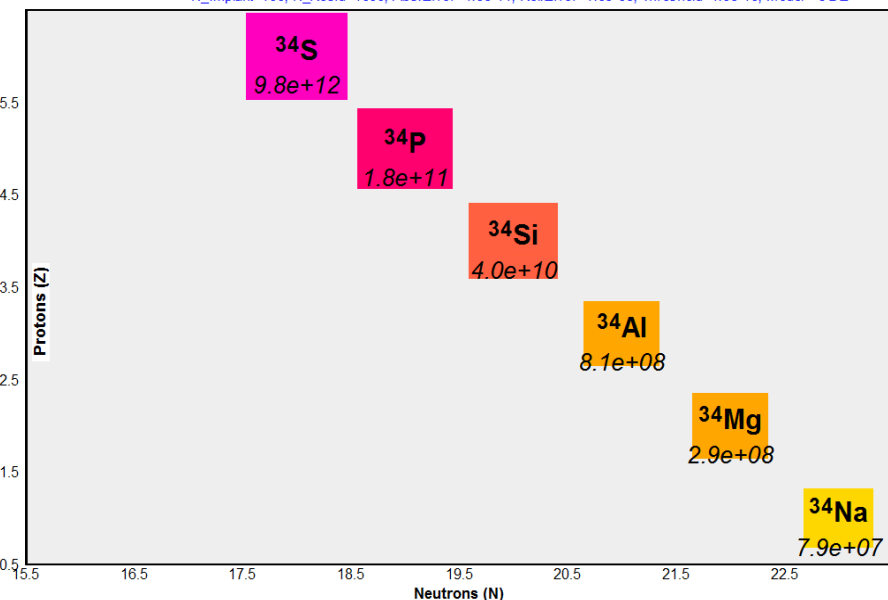
T 1/2 : compilation of experimental and calculated values.
See the AME dialog for details

v.9.10.331. No Decay Branch Database

Radioactive decay residues

Initial isotope: ^{34}Na

Irradiation Time (IT) = $1.00\text{e}+03$ sec; Decay Time (DT) = $1.00\text{e}-06$ sec; Irr. Rate = $1.00\text{e}+10$ pps; Plot All isotopes
 N_Implant=100, N_Resid=1000, Abs. Error= $1.0\text{e}-11$, Rel. Error= $1.0\text{e}-03$, Threshold= $1.0\text{e}-10$, Model="ODE"

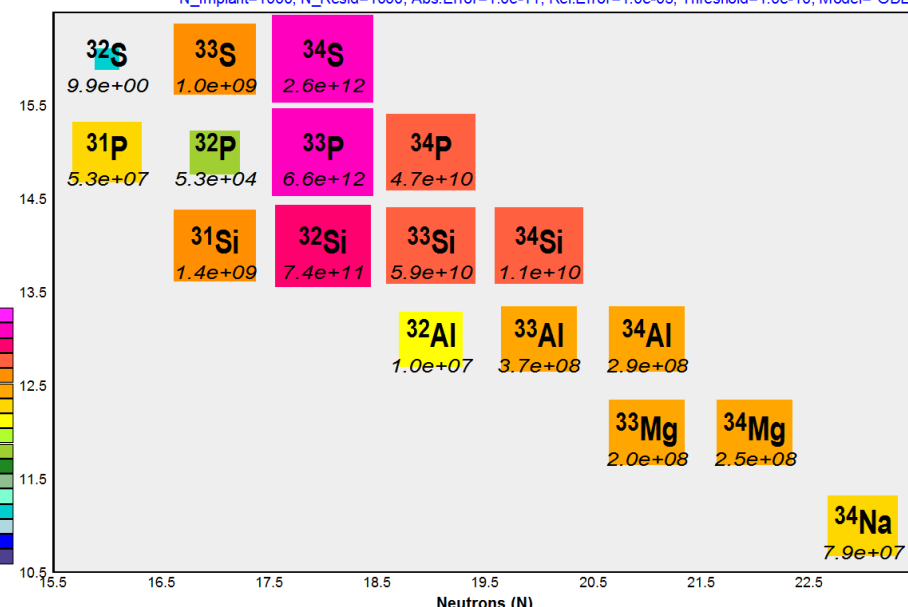


v.9.10.341. With Decay Branch Database

Radioactive decay residues

Initial isotope: ^{34}Na

Irradiation Time (IT) = $1.00\text{e}+03$ sec; Decay Time (DT) = $1.00\text{e}-06$ sec; Irr. Rate = $1.00\text{e}+10$ pps; Plot All isotopes
 N_Implant=100, N_Resid=1000, Abs. Error= $1.0\text{e}-11$, Rel. Error= $1.0\text{e}-03$, Threshold= $1.0\text{e}-10$, Model="ODE"



v.9.10.331. No Decay Branch Database

Mode to implant: 1. One nucleus to implant. Chose manually here

Yield = Number of atoms; N of DI = Number of Different Isotopes; Final Time (FT) = Irradiation Time (IT) + Decay Time (DT)

1. Chose fragment to implant: A=22, Element=si, Z=14. Beta+ decay selected.

Irradiation (Implantation): IT = 1000 sec, N of DI @ time (IT) = 5

Radiation Residues as Function of time (DT): DT = 0, N of DI @ time (FT) = 5, Total Yield @ time (FT) = 1e+13

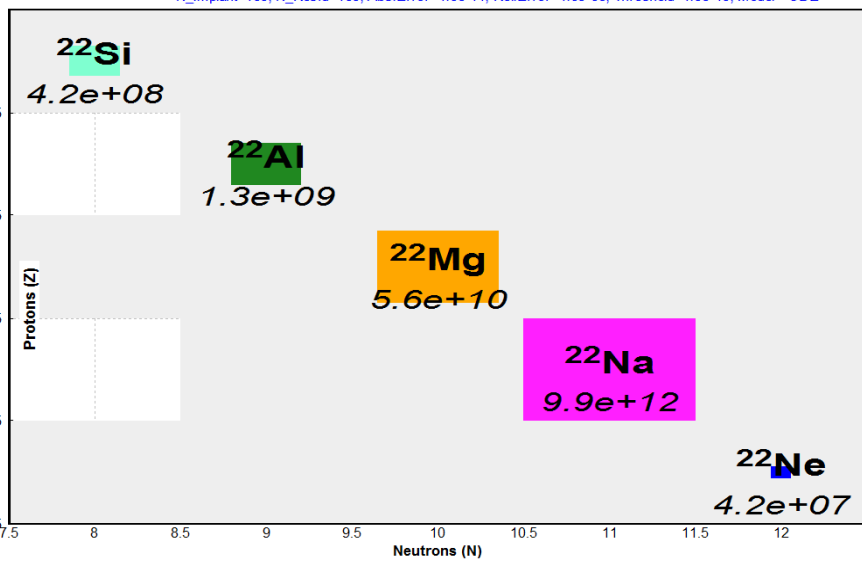
Buttons: Calculate, Options, 1D: Residues as function of time, 1D: Activity as function of time, 2D: Final Residues (@ TF), CAUTION RADIATION AREA, Quit, Link.

Elapsed time is 00:00:00.43 or 0.43 sec

Radioactive decay residues

Initial isotope: ^{22}Si

Irradiation Time (IT) = 1.00e+03 sec; Decay Time (DT) = 1.00e-06 sec; Irr.Rate = 1.00e+10 pps; Plot All isotopes
 N_Implant=100, N_Resid=100, Abs.Error=1.0e-11, Rel.Error=1.0e-03, Threshold=1.0e-10, Model="ODE"



v.9.10.341. With Decay Branch Database

Mode to implant: 1. One nucleus to implant. Chose manually here

Yield = Number of atoms; N of DI = Number of Different Isotopes; Final Time (FT) = Irradiation Time (IT) + Decay Time (DT)

1. Chose fragment to implant: A=22, Element=si, Z=14. Beta+ and Beta+p selected.

Irradiation (Implantation): IT = 1000 sec, N of DI @ time (IT) = 8

Radiation Residues as Function of time (DT): DT = 0, N of DI @ time (FT) = 8, Total Yield @ time (FT) = 8.96e+12

Buttons: Calculate, Options, 1D: Residues as function of time, 1D: Activity as function of time, 2D: Final Residues (@ TF), CAUTION RADIATION AREA, Quit, Link.

Elapsed time is 00:00:00.70 or 0.70 sec

Radioactive decay residues

Initial isotope: ^{22}Si

Irradiation Time (IT) = 1.00e+03 sec; Decay Time (DT) = 1.00e-06 sec; Irr.Rate = 1.00e+10 pps; Plot All isotopes
 N_Implant=100, N_Resid=100, Abs.Error=1.0e-11, Rel.Error=1.0e-03, Threshold=1.0e-10, Model="ODE"

