

File: http://lise.nsl.msui.edu/9_10/radiation/238U_CoulombFission.radlist

This file has been produced by LISE⁺⁺ with next settings and Coulomb Fission mechanism

P rojectile	$^{238}\text{U}^{92+}$
1000 MeV/u	1 pA
F ragment	$^{130}\text{Te}^{52+}$
T arget	^{207}Pb 1 mm
St ripper	
M aterial 1	Si 100 mm
A FaradayCup 1	enable

Radiation residue calculator

Mode to implant

- ☐ 1. One nucleus to implant. Chose manually here
- ☒ 2. List of isotopes from file to implant
- ☐ 3. Select detector to obtain the list of isotopes stopped in

designations

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

"238U_CoulombFission.radlist" N of isotopes = 490

FP_Stack1 Refresh N of isotopes = 5

Total Irradiation Rate

Rate = 7.569e+07 pps

Irradiation (Implantation)

IT : Irradiation Time [sec] = 1

N of DI @ time (IT) = 511

Radiation Residues as Function of time (DT)

DT : Decay Time after irradiation (sec) = 3.15e7

N of DI @ time (FT) = 122

Total Yield @ time (FT) = 7.57e+7

CAUTION RADIATION AREA

Calculate

Options

1D : Residues as function of time

1D : Activity as function of time

2D : Final Residues (@ TF)

Quit Link

Elapsed time is 00:05:06.80 or 306.80 sec

Decay time 1 year

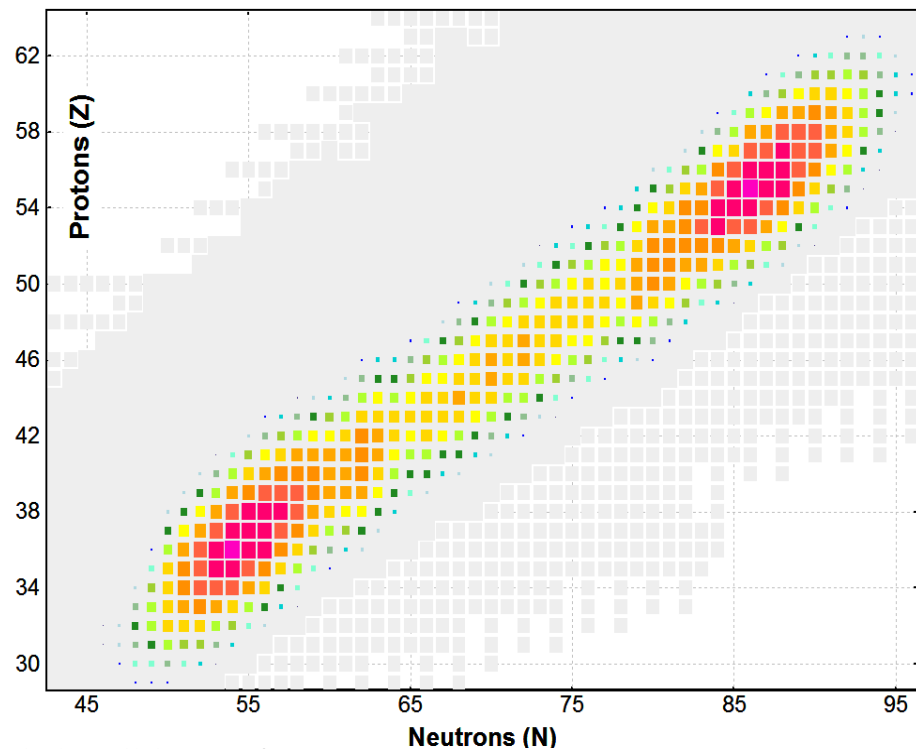
Takes 5 minutes

Implanted isotopes

(number of different isotopes is 490)

[3] Total: All reactions (pps)

^{238}U (1000 MeV/u) + Pb (1 mm); Settings on ^{130}Te ; Config: MA
dp/p=100.00%
N=0-200

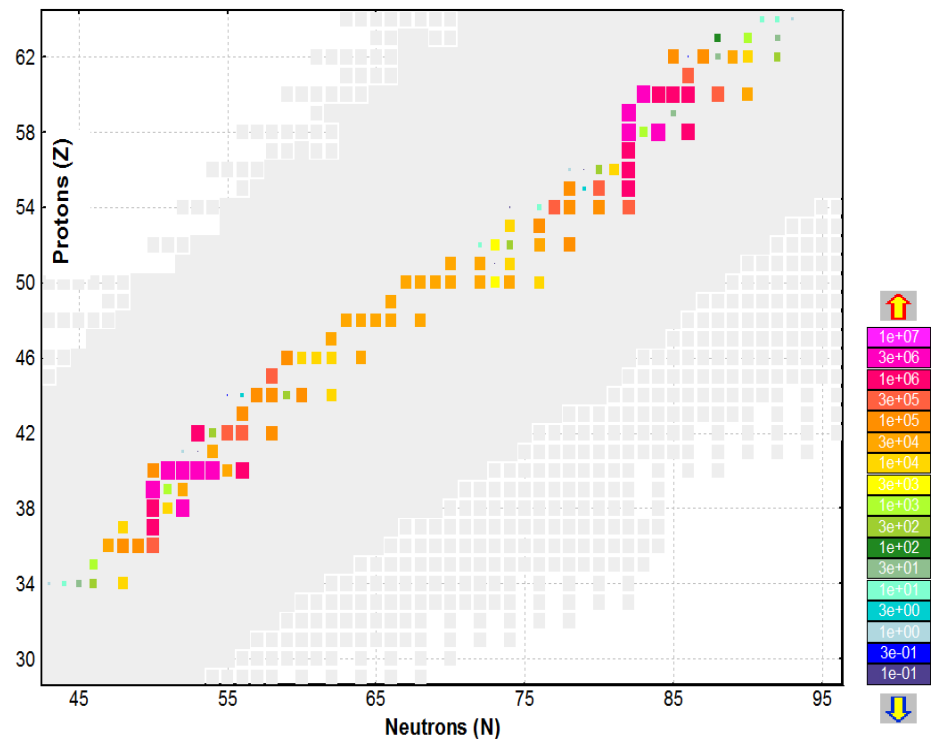


Radiation Residues after 1 year decay time

(number of different isotopes is 122)

Radioactive decay residues

Implanted isotopes file : "G:\238U_CoulombFission.radlist" (490 different isotopes)
Irradiation Time (IT) = 1.00e+00 sec; Decay Time (DT) = 3.15e+07 sec; Plot All isotopes
N_Implant=100, N_Resid=1000, Abs.Error=1.0e-05, Rel.Error=1.0e-03, Threshold=1.0e-04, Model="RKF4"



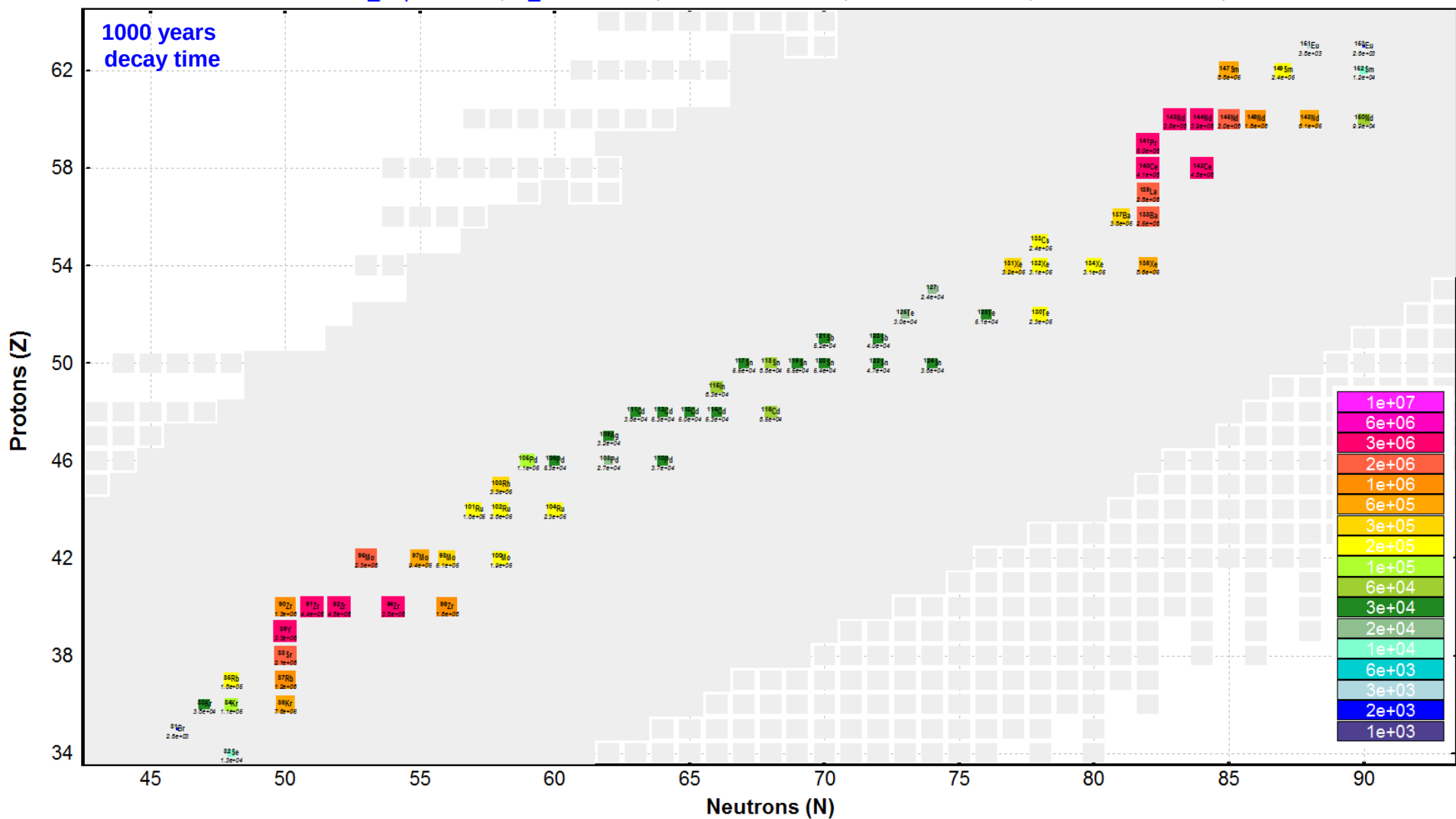
Only stable residues

Radioactive decay residues

Implanted isotopes file : "G:\238U_CoulombFission.radlist" (490 isotopes)

Irradiation Time (IT) = 1.000e+00 sec; Decay Time (DT) = 3.150e+10 sec

N_Implant=100, N_Resid=1000, Abs.Error=1.0e-06, Rel.Error=1.0e-03, Threshold=1.0e-05, Model="RKF45"



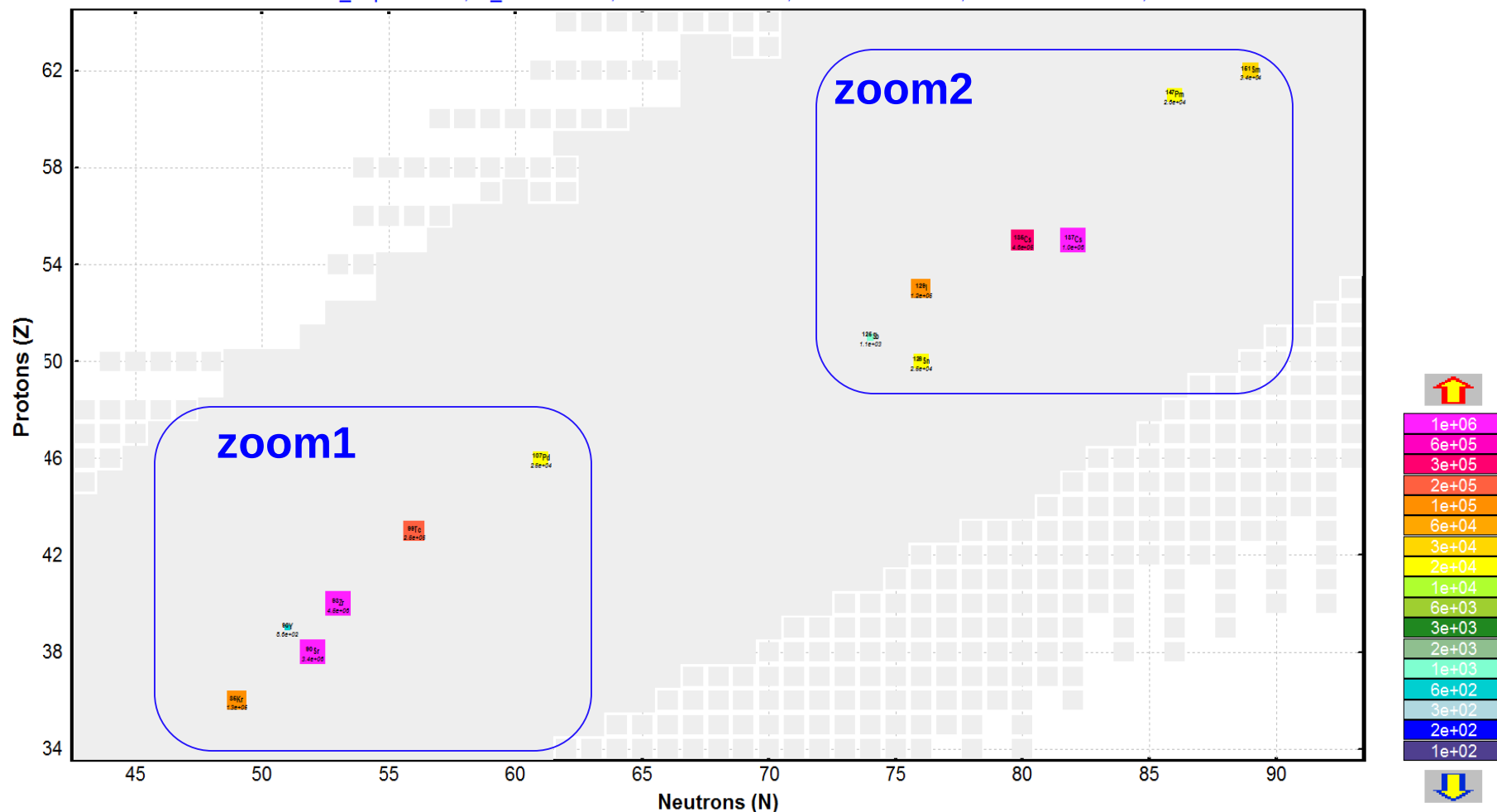
Only radioactive residues

Radioactive decay residues

Implanted isotopes file : "G:\238U_CoulombFission.radlist" (490 isotopes)

Irradiation Time (IT) = 1.000e+00 sec; Decay Time (DT) = 3.150e+10 sec; Plot=only RadioActive

N_Implant=100, N_Resid=1000, Abs.Error=1.0e-05, Rel.Error=1.0e-02, Threshold=1.0e-04, Model="RKF45"



zoom1

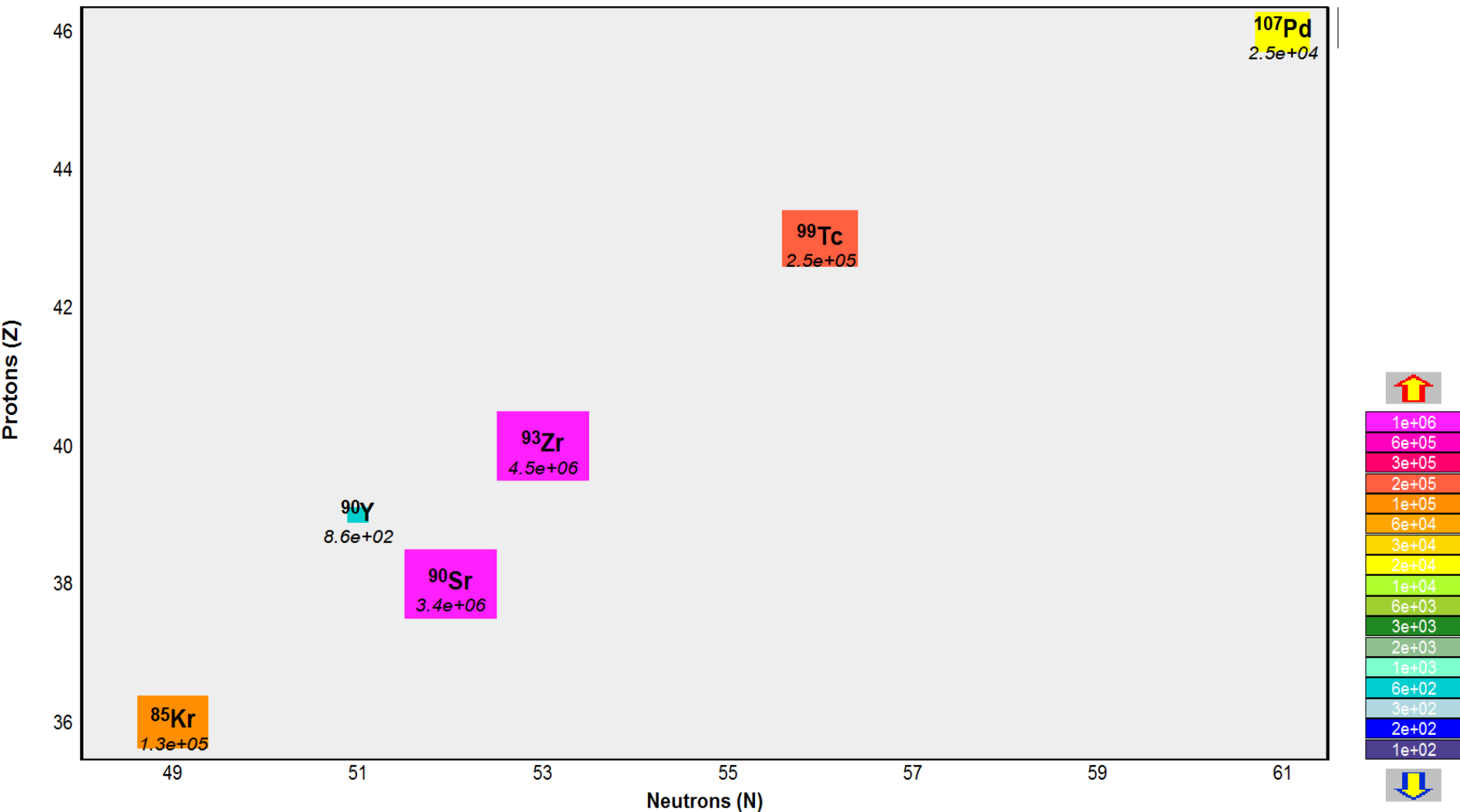
Only radioactive residues

Radioactive decay residues

Implanted isotopes file : "G:\238U_CoulombFission.radlist" (490 isotopes)

Irradiation Time (IT) = 1.000e+00 sec; Decay Time (DT) = 3.150e+10 sec; Plot=only RadioActive

N_Implant=100, N_Resid=1000, Abs.Error=1.0e-05, Rel.Error=1.0e-02, Threshold=1.0e-04, Model="RK45"



zoom2

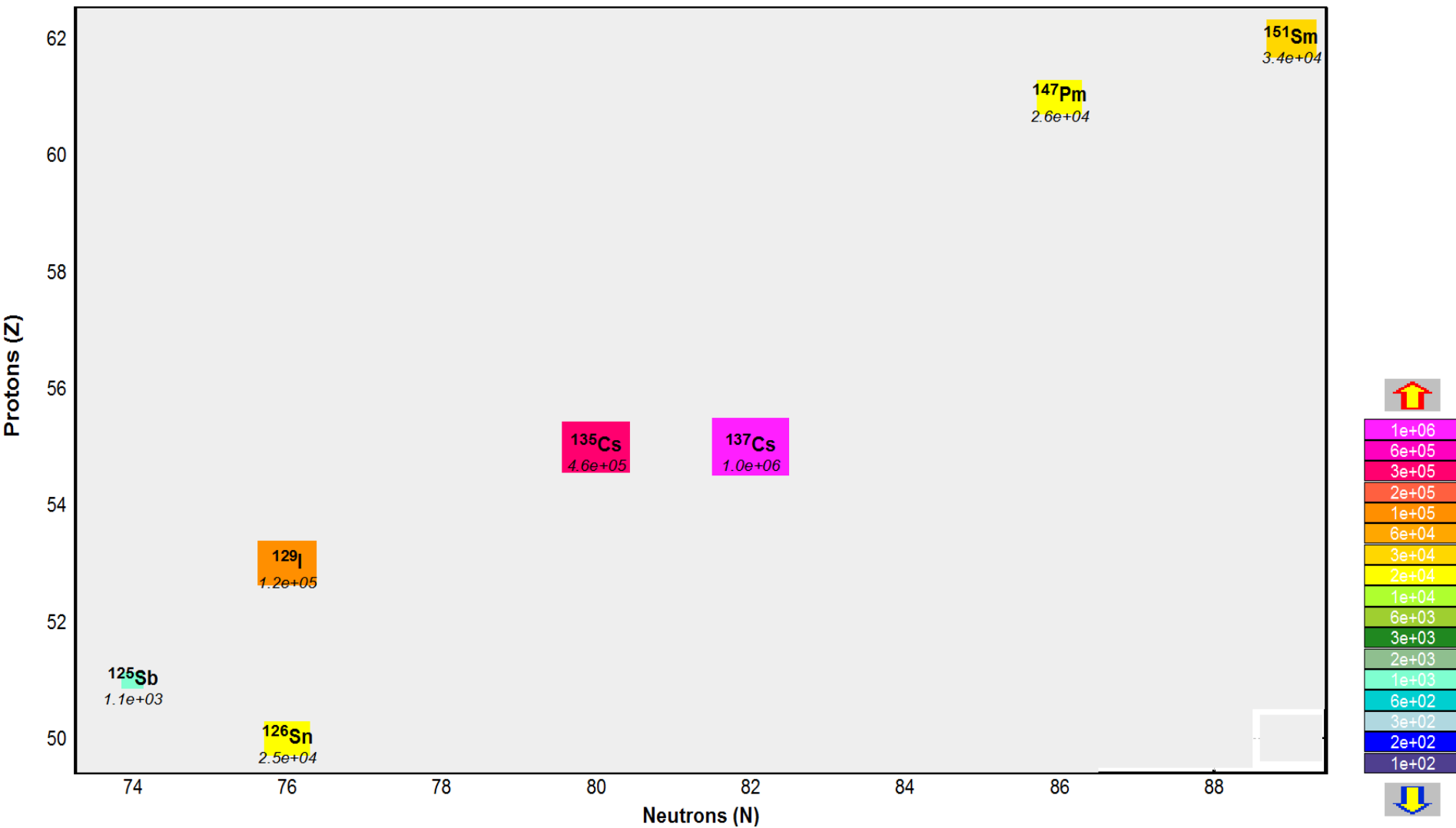
Only radioactive residues

Radioactive decay residues

Implanted isotopes file : "G:\238U_CoulombFission.radlist" (490 isotopes)

Irradiation Time (IT) = 1.000e+00 sec; Decay Time (DT) = 3.150e+10 sec; Plot=only RadioActive

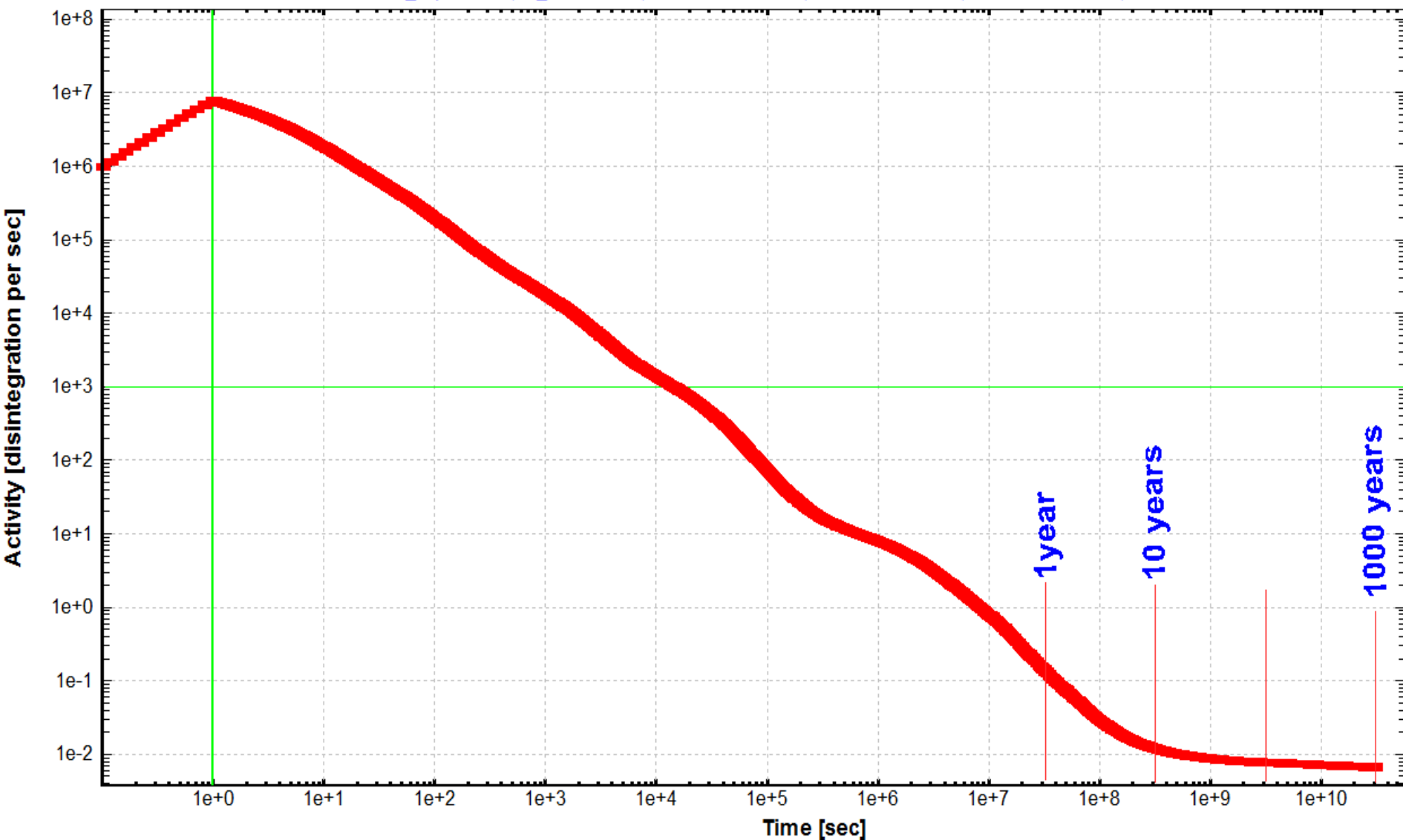
N_Implant=100, N_Resid=1000, Abs.Error=1.0e-05, Rel.Error=1.0e-02, Threshold=1.0e-04, Model="RKF45"



Activity

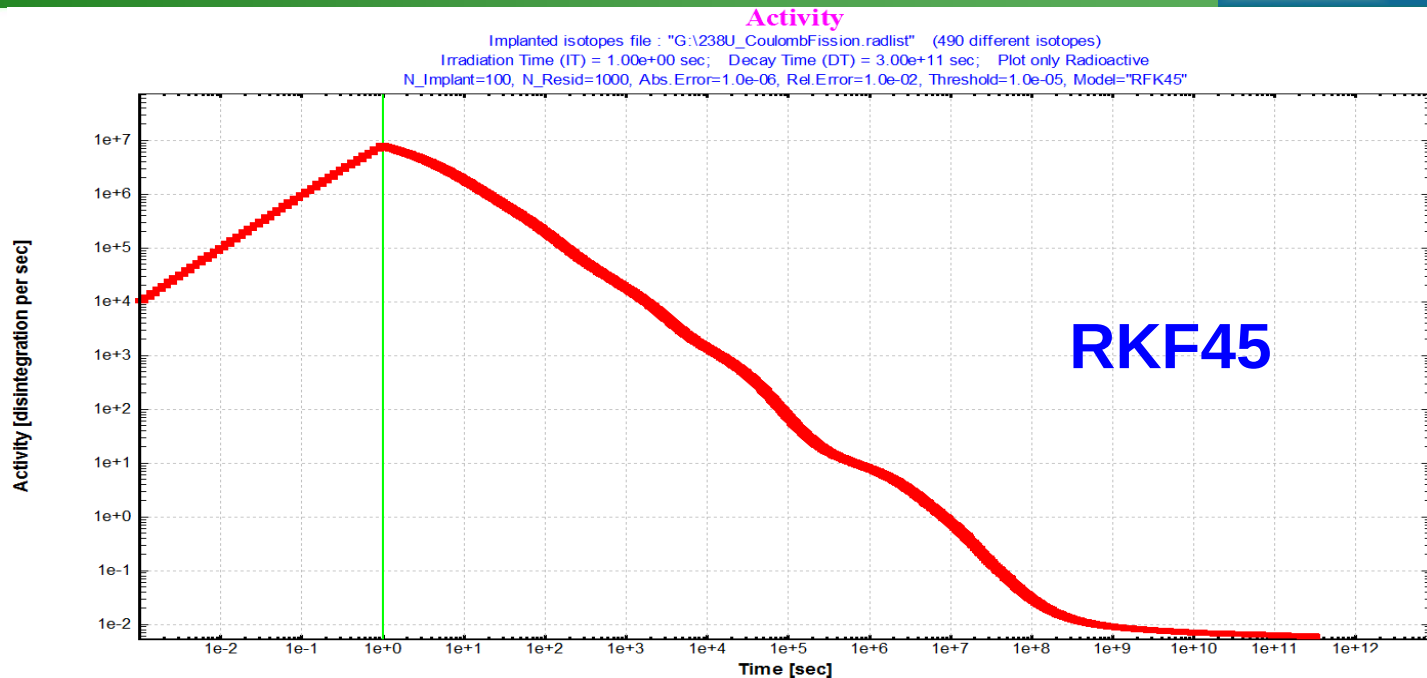
Activity

Implanted isotopes file : "G:\238U_CoulombFission.radlist" (490 isotopes)
 Irradiation Time (IT) = 1.000e+00 sec; Decay Time (DT) = 3.150e+10 sec; Plot=only RadioActive
 N_Implant=100, N_Resid=1000, Abs.Error=1.0e-05, Rel.Error=1.0e-02, Threshold=1.0e-04, Model="RK45"

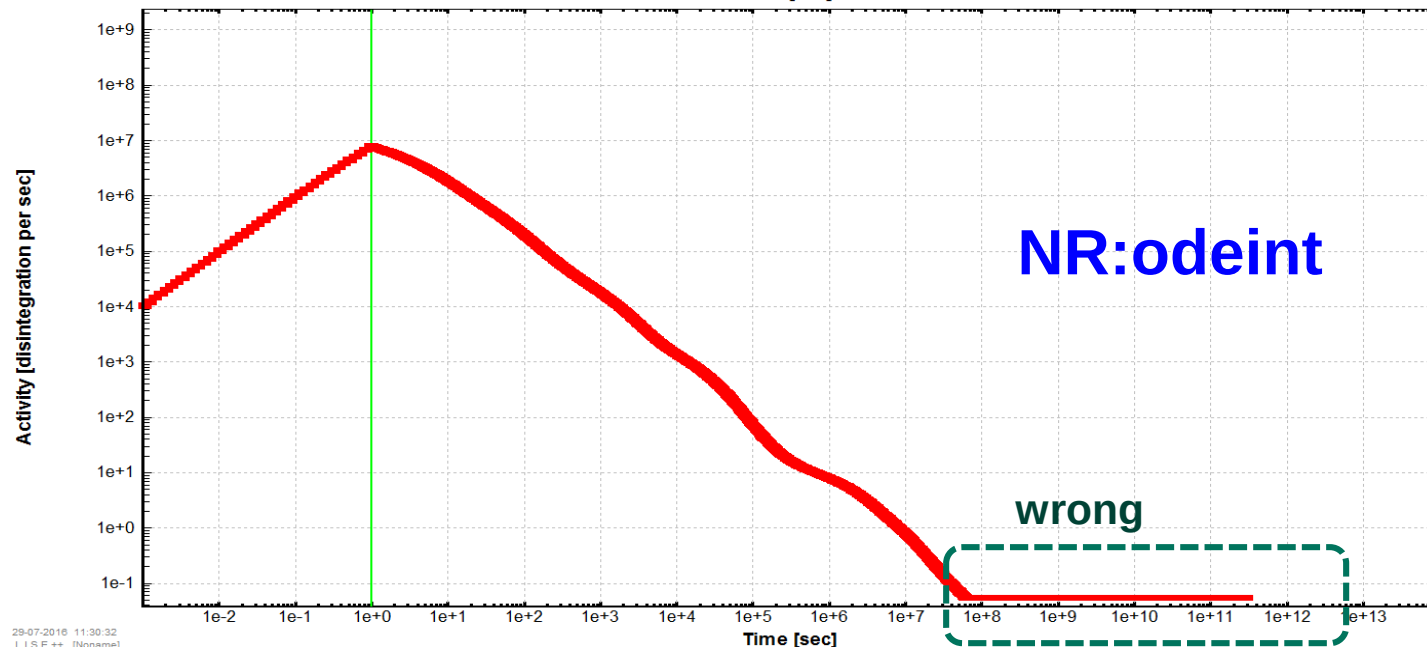


^{238}U fission case calculation : 10 000 years decay time

Activity



ODE → not finished



Option	Value	Description	Default value
N_Implant	100	number of points : Irradiation	100
N_Decay	1000	number of points : DECAY	100
AbsError	1.000e-06	absolute error tolerance	1e-11
RelError	1.000e-02	relative error tolerance	1e-03
Y_thrshld	1.000e-05	Minimum yield value	1e-10

50 More intense radioactive residues during 100 years decay time

Only radioactive residues

Evolution of Radiation Residue Yield

Implanted isotopes file : "G:\238U_CoulombFission.radlist" (490 isotopes)

Irradiation Time (IT) = 1.00e+00 sec; Decay Time (DT) = 3.15e+09 sec; Plot only RadioActive

N_Implant=100, N_Resid=100, Abs.Error=1.0e-05, Rel.Error=1.0e-03, Threshold=1.0e-04, Model="RKF45"

