

//-----

// 14.7.24 06/26/20

// d\_Target\_interactionArea : DONE!

// d\_Foil\_lifetime dialog : redesign 100%, connection 80%

// w\_spectrometer\_scheme : 15%

// d\_CN0\_base and d\_CH1\_base dialogs have been modified (bugs with Q, Nuclides button size)

// w\_Animation -- modifications for Z-level painting and for timer

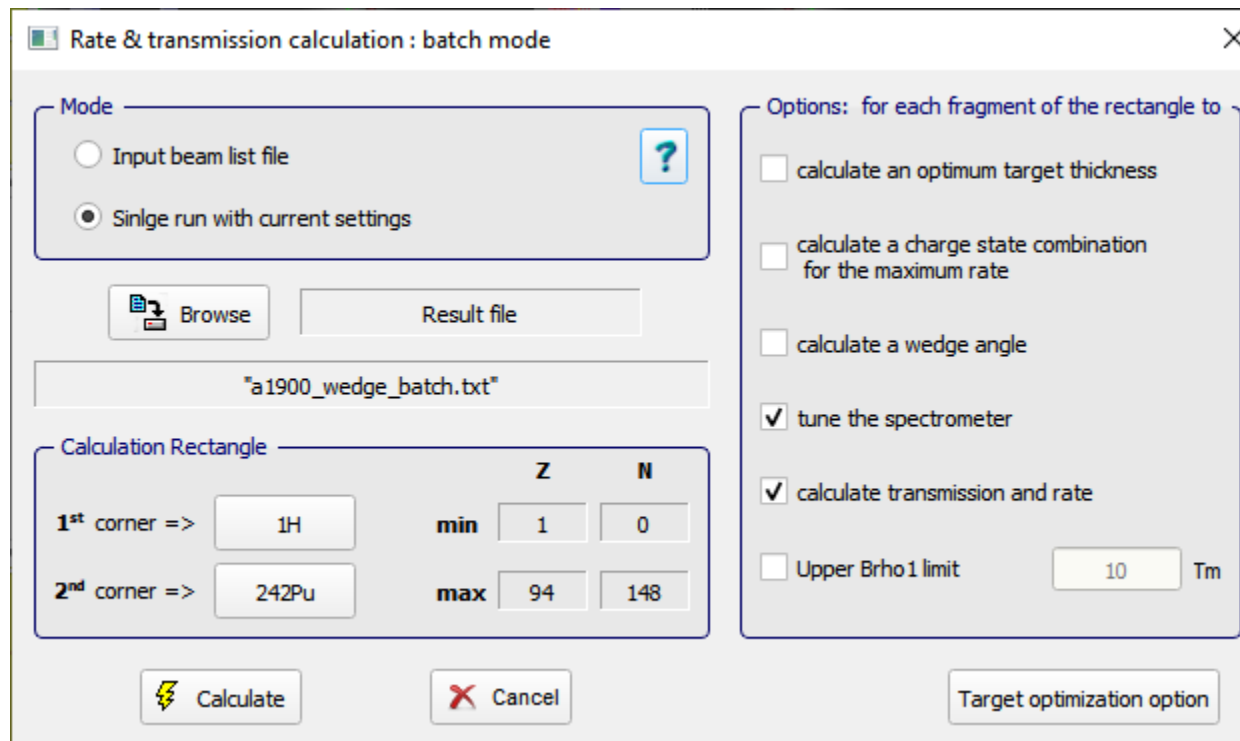
## Comments:

- Oleg's this period schedule: vacation 18h, FRIB PID resolution project 10h
- Ksenia's daily contributions from 03/25 can be found in the LISE-qt version folder\* : folder "\_from\_Ksenia"

\* [https://1drv.ms/u/s!Aj8\\_a9l2zt5kivsKcdzVsKNRZjuzOw?e=a7odi](https://1drv.ms/u/s!Aj8_a9l2zt5kivsKcdzVsKNRZjuzOw?e=a7odi) pwd: "letsFinish09"

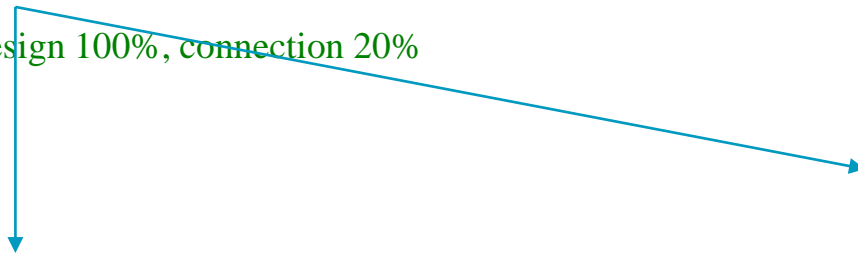
```
//-----
// 14.7.25 06/27/20
// Implementation of subroutines from Borland to Qt:
// CmFitMatrix, CmFitMinimization, CmBatchFile (Mainwindow_fit.cpp) : completion 100%
// "Optimum target" (cible_opti) -- w_Graph_opt.cpp : completion 5%
// "Optimum wedge" (cible_opti_wedge) -- w_Graph_optWedge.cpp : completion 5%
// Plot utilities -- win_utilPlot.cpp : completion 20%

// d_Batch_file dialog : redesign 100%, connection 80% (rest: file read, benchmarks)
```





//-----  
 // 14.7.26 06/28/20  
 // CmBatchFile (calculation) : DONE!  
 // d\_Batch\_file dialog : DONE!  
 // d\_Foil\_lifetime dialog : DONE!  
 // d\_Charge\_optimum dialog : redesign 100%, connection 20%



Lister - [c:\LISEcute\\_install\files\2.foil]

File Edit Options Help

[Projectile]

Z=20  
 N=28  
 Q=20  
 Energy=120  
 Intensity=1

*d\_Foil\_lifetime:  
 read/write settings & benchmarked*

[Target]

detector="1,1,1,1.85,0.000,0 ; Number,State,Thickness,density,angle,SolidGas"  
 ingradient1="4,1,9.012 ; Z,Atoms,Mass"

[BeamVector]

X=1  
 T=6  
 Y=1  
 P=8  
 L=0  
 D=0.07

[BeamOptions]

Select=0  
 PulseDuration=0.01  
 RepetitionFrequency=5  
 RotationTargetRadius=20  
 RotationTargetFrequency=5

[BeamShapes]

Select=0  
 percent=90

[MaterialProperties]

Select=0  
 SelectK1=1  
 epsilon=0.8

```
//-----
// 14.7.27 06/29/20
// w_spectrometer_scheme : 30%
// d_Charge_optimumShowResults dialog (call from CmBatchFile) : redesign 100%, connection 50%
// d_Charge_optimumStats dialog (call from L_Lisework) : redesign 100%, connection 50%
```

**QC 2nd step: optimum charge state combination - [Preview] - Qt ...**

Reaction: 48Ca + Be

Fragment of interest: 240

Optimum target thickness: 1.35e+3 mg/cm<sup>2</sup>

Maximum rate\*: 7.8e+6 pps

\* - for the final charge state combination

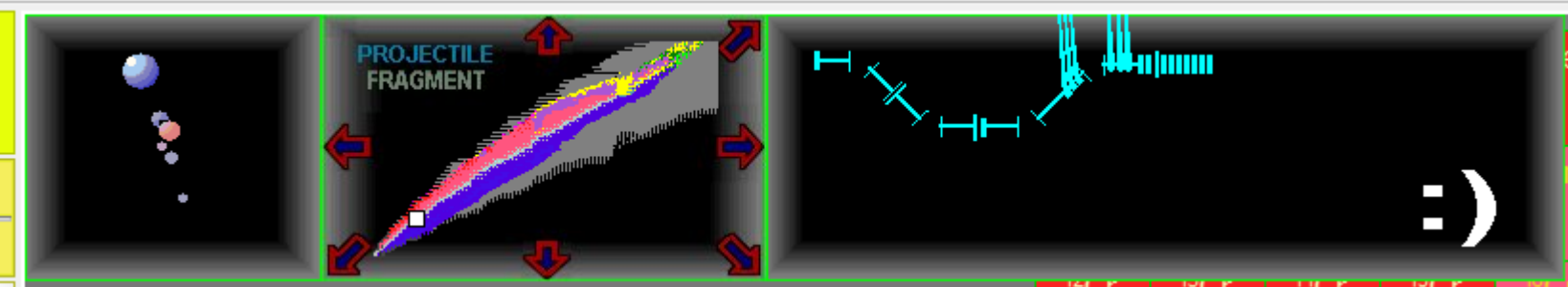
Charge state combination

Current: 16+ 16+ 16+

Calculate for best production: 15+ 15+ 15+

3rd step: Accept & Repeat optimum target calculations

after 5 seconds this dialog will be closed automatically



**QC Charge state optimization statistics - [Preview] - Qt Creator**

**N all** Number of all charge state combinations after filters: 1000

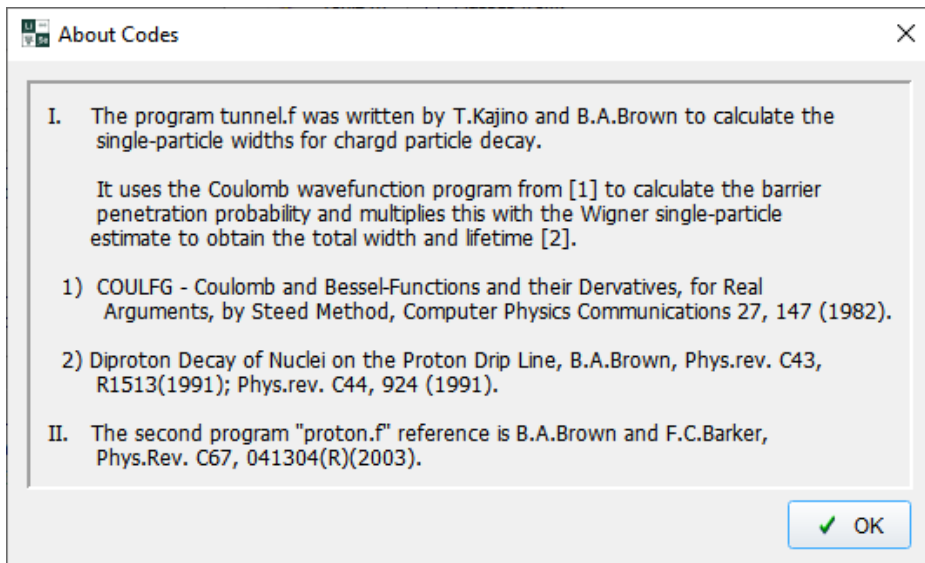
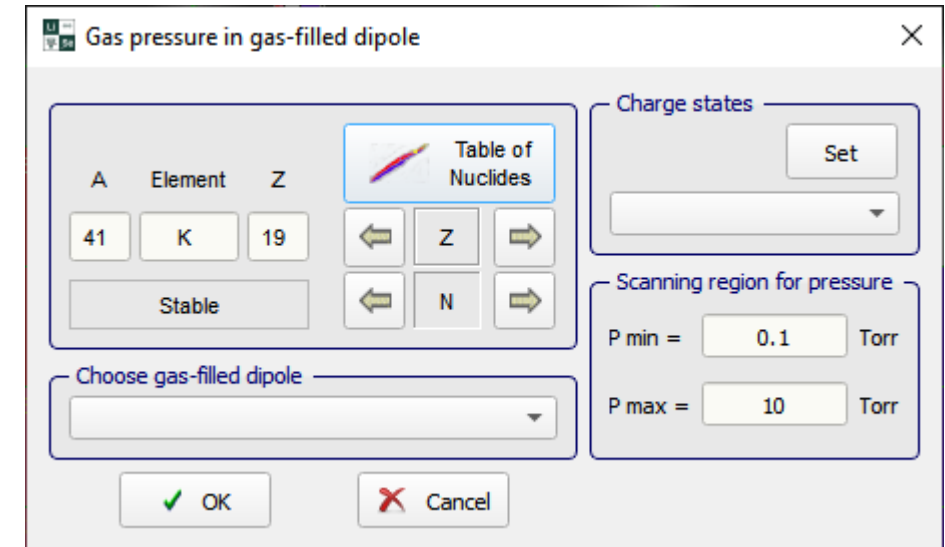
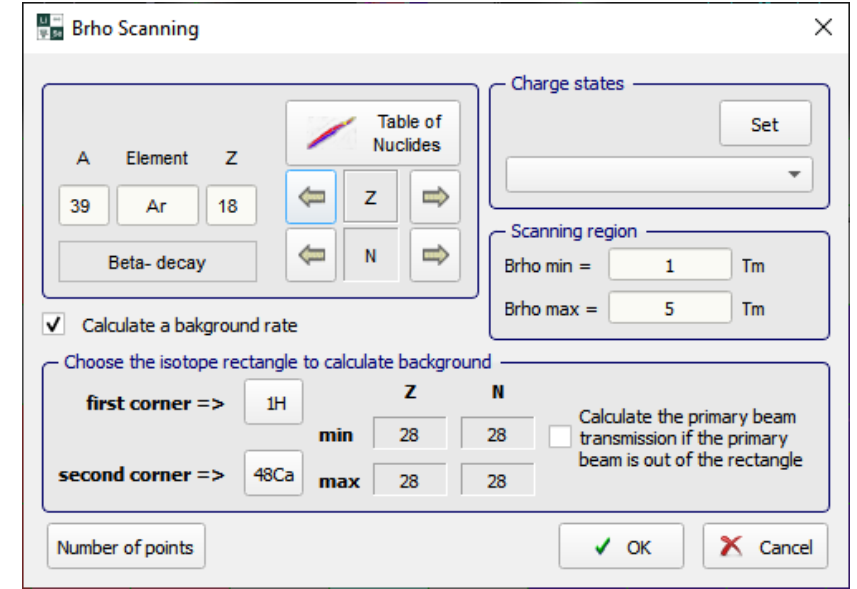
**Ratios to N\_all**

<b>N good</b>	Number of ions with non zero transmission	700	70.0	%
<b>N last</b>	Number of ions with zero transmission from last block only	200	20.0	%
<b>N zero</b>	Number of ions with zero transmission before last block	200	20.0	%
<b>N removed</b>	Number of "N_zero" ions optimized away	100	10.0	%

fragment:

```
// 14.7.28 06/30/20
// Dialogs d_CN/d_CN_scanning & d_Uutilities/d_Brho_scanning were joint to d_CN/d_CN2_scanningBrho
// d_CN/d_CN2_scanningBrho dialog : redesign 100%, connection 40%
// d_CN/d_CN2_gasPressure dialog : redesign 100%, connection 40%
// d_ProtonRadioactivityAbout : DONE!
//
// Implementation of w_Graph_optimumScanning subroutines CmBrhoScanning & CmGasPressure
// from Borland to Qt

// creation of new base class d_CN2_base_dlg : redesign 100%, connection 80%
// classes d_CN2, d_CN2_gasPressure, d_CN2_scanningBrho, d_CN2_optimumTarget
// will be remade based on d_CN2_base_dlg class
```



// 14.7.29 07/01/20

// Implementation of d\_AbrasionFission\_initFN\_List.\* and d\_AbrasionFission\_initFN\_Plot.\*

// from Borland to Qt

// d\_AbrasionFission\_initFN dialog : redesign 100%, connection 40%

comment: it's mostly Ksenia's contribution, because in spite of vacation

Oleg's night will be devoted "Thomas-Peter PID resolution request"

//-----  
 // 14.7.30 07/02/20  
 // d\_AbrasionFission\_initFN dialog : redesign 100%, connection 70%  
 // d\_AbrasionFission\_initFN\_List dialog : DONE!

**Isotope List File**

Open file View file Clear

238U\_Ex20\_out.zn

Rows = 21 OK Cancel

**Note**  
 The Isotope List file is in ASCII format. Comment string begin with "!" or ";"  
 The Columns can be separated by a Space, a Comma or a Tabulation. User can put comments after the data.  
 1st column: (Z) atomic number  
 2nd column: (N) neutron number

**Abrasion-Fission: Initial fission nuclei**

$^{238}\text{U}$  (120.0 MeV/u) + Be

Choose Final fission fragment: **132Sn**

Calculate ALL I & II

Calculate - I : Fission channels after Abrasion\* + CF

Calculate - II : Fission of nuclei gated on Final Fragment \*\*

\* - takes ~ a minute; \*\* ~ 10 minutes - a hour

Fission properties  
 Evaporation settings  
 Prefragment excit.energy

Batch file mode

Show 2D: Fissile Nuclei CS for each run

238U\_Ex20\_out [n=21]

Run the batch file! Takes time..

Settings - I (Select region)

coef for Zb = 0.8 0.1 < coef <= 1; recommendation: 0.75 Z\_stop = 74

coef for Nb = 0.8 0.1 < coef <= 1; recommendation: 0.80 N\_stop = 117

Include Coulomb fission channel determine low Z (element number) where Abrasion-Ablation stops. Zstop = coef \* Zbeam

Settings - II

Cross-section minimum threshold of to use a nucleus in calculations (mb) 1.0e-08

Number of points from excitation energy distribution to use in calculations

Statistical values to show in the result frames

1: only mean value <E>

3: E-v, <E>, E+v (v=HWHM/2)

Mean value and Standard Deviations

More Probable value and its variances

Median value and its variances (default)

Detailed output  23892\_00904\_13250\_p1m Browse Show

General log file  IFN Browse Show

Results - I (Fissile channels after abrasion)

Total fission cross section in the region (mb) 1.60e+003

Number of fissile nuclei in the region ( I ) 1067

Number of fissile nuclei used to gate on the final fragment ( II ) 567

Fission Channels cross sections

Results - IIa: Initial Fissile Nuclei Gated on the Final Fission Fragment

2D: Fissile Nuclei CS

E\*, MeV ---

Z ---

N ---

Results - IIb: Final Fission Fragment

Final fragment cross section --- mb mdn (-vrns; +vrns), where "mdn": median; "vrnc": variance

Initial fission fragment excitation energy --- MeV 1D: Excitation Energy

Velocity in CMS --- cm/ns 1D: Velocity in CMS

Number of nucleons emitted to reach FFF --- dA, dN, dZ



06/25

1	Directory	Subdirectory	Dialog	re-Design, %	Link, %	DONE	Plots total	Plots done	Bench-mark	Comments	date	size	size done	
217	w_Stuff		d_FRIB_isotopes								03/31/20	3078	0	
218	w_Stuff		d_Password								03/31/20	2234	0	
219	w_Stuff		d_Transmission_statistics	100	100	1	0				05/28/20	60991	60991	
220	w_Stuff		d_Value_input	100	100	1					04/15/20	3401	3401	
221	w_Stuff		w_Gauge	100	100	1					03/31/20	5122	5122	
222														
223		total		220	sum	139	63.2%					5.15E+06	3.74E+06	72.6%
224		procent			completely done	118	53.6%							

07/02

1	Directory	Subdirectory	Dialog	re-Design, %	Link, %	DONE	Plots total	Plots done	Bench-mark	Comments	date	size	size done	
218	w_Stuff		d_Transmission_statistics	100	100	1	0				05/28/20	60991	60991	
219	w_Stuff		d_Value_input	100	100	1					04/15/20	3401	3401	
220	w_Stuff		w_Gauge	100	100	1					03/31/20	5122	5122	
221														
222		total		219	sum	150	68.5%					5.12E+06	3.83E+06	74.6%
223		procent			completely done	123	56.2%							

