LISE^{++} *cute* : v.16.4

v.16.4.3
07/12/22

Many thanks to Marc and Dave for comments and suggestions

- Account for material lengths in optics
- Update of gas mixture use
- Exponential Abrasion Model (v.16.3)
- LISE^{++} site : secure connection
- Important updates (Reaction mechanism, ETACHA, bugs)
- List of all updates (v.16.2.12-16.4.3)

https://lise.nscl.msu.edu/16/16_4_MaterialAsDrift.pdf

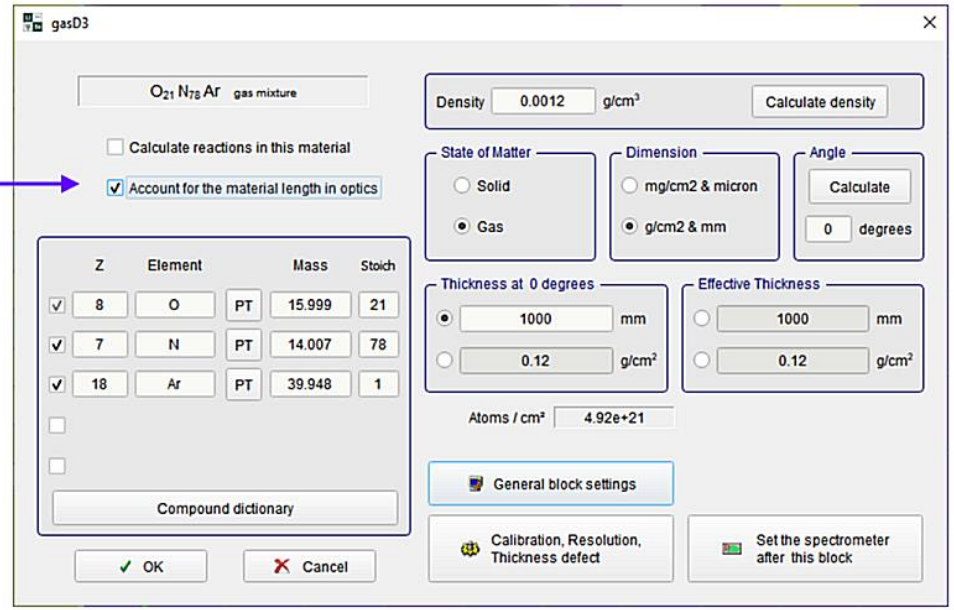
LISE ++ cute : Account for material lengths in optics

v.16.4.1
07/09/22

New version allows to account for the material length in optics and as well in time of flight calculations.

The Block compound in this case is considered as an optical drift block in optical matrix calculations.

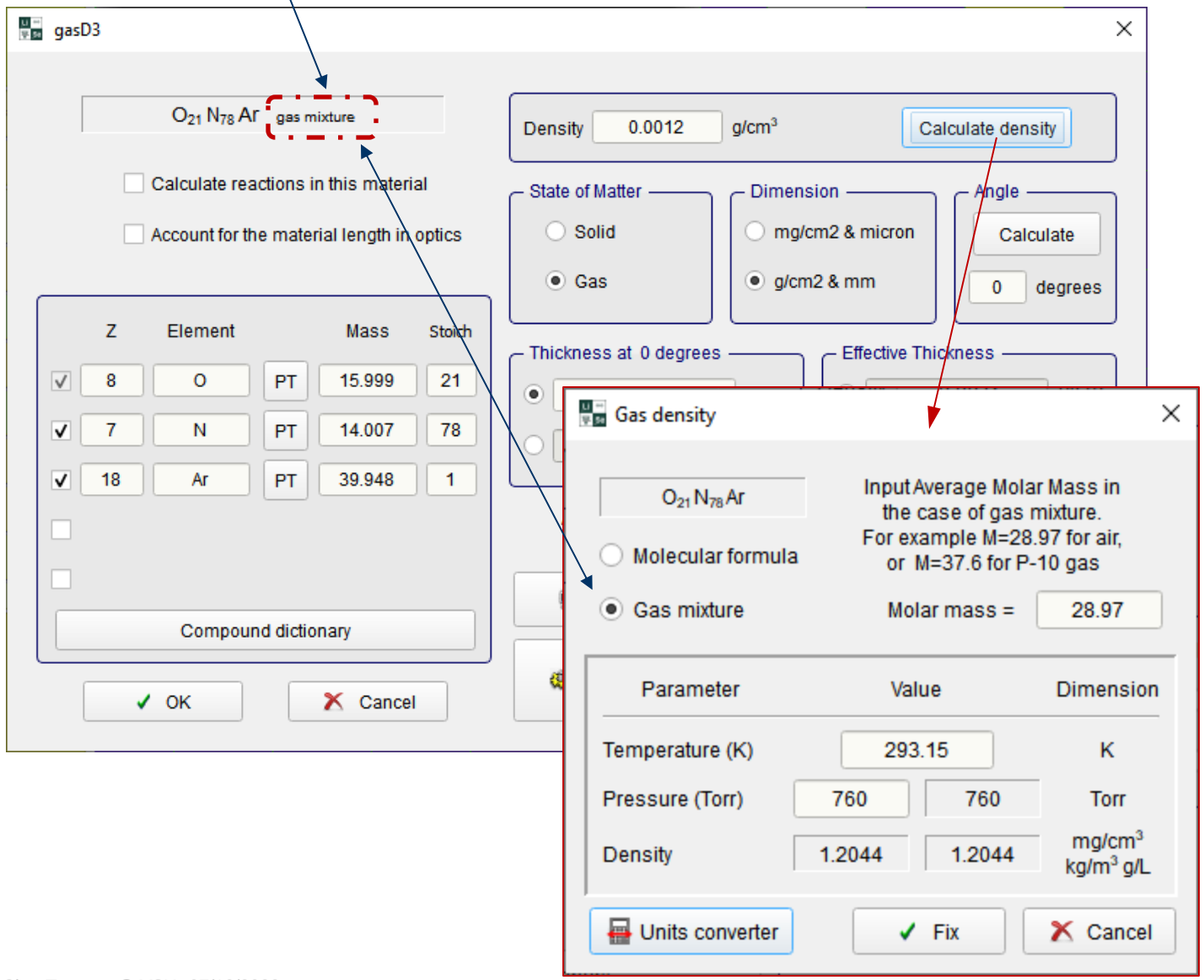
Pay attention to use this option for compounds inside of a separator!!!



Oleg Tarasov @ MSU 04/06/2022 1

v.16.3.18 : Gas mixture molar mass update

New feature: “gas mixture” message



Some compounds in ../lisecfg/compound.dat file contain the molar mass value that tells LISE++ that this gas is a mixture

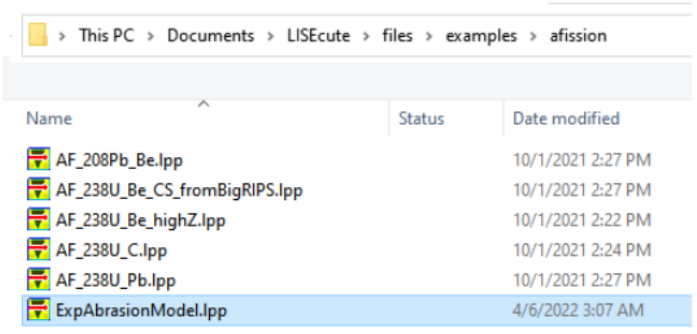
```
Xylene,H10 C8,0.8611
* Gases
Acetylene,H2 C2,0.0010825
Air (gas mixture),021 N78 Ar1,0.001205,28.97
Allene Propadiene,H4 C3,0.0016656
Ammonia,H3 N1,0.00070804
Butane,H10 C4,0.0024164
```

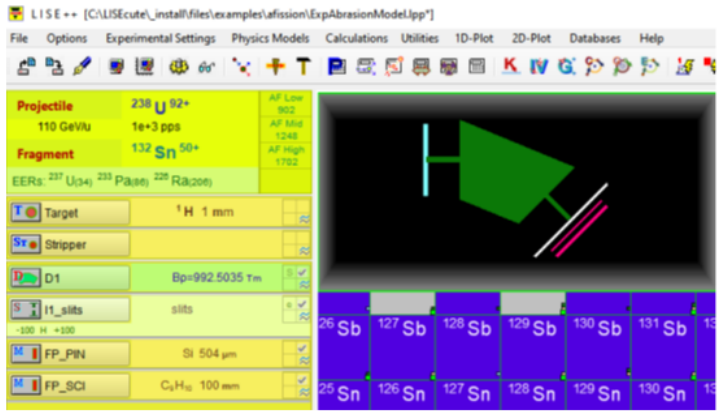
http://lise.nscl.msu.edu/16/16_3_ExpAbrasion.pdf

LISE++cute : Exponential Abrasion Model

v.16.3.1
04/06/22

- Exponential Abrasion Model implementation to LISE++cute
- Use of the Excitation energy fissile nuclei parameters from the BeAGLE calculations in LISE++cute
- LISE++cute Abrasion-Fission 3 EER with the EIC settings
- Comparison of calculation results of different models
- Fission Fragment Kinematics



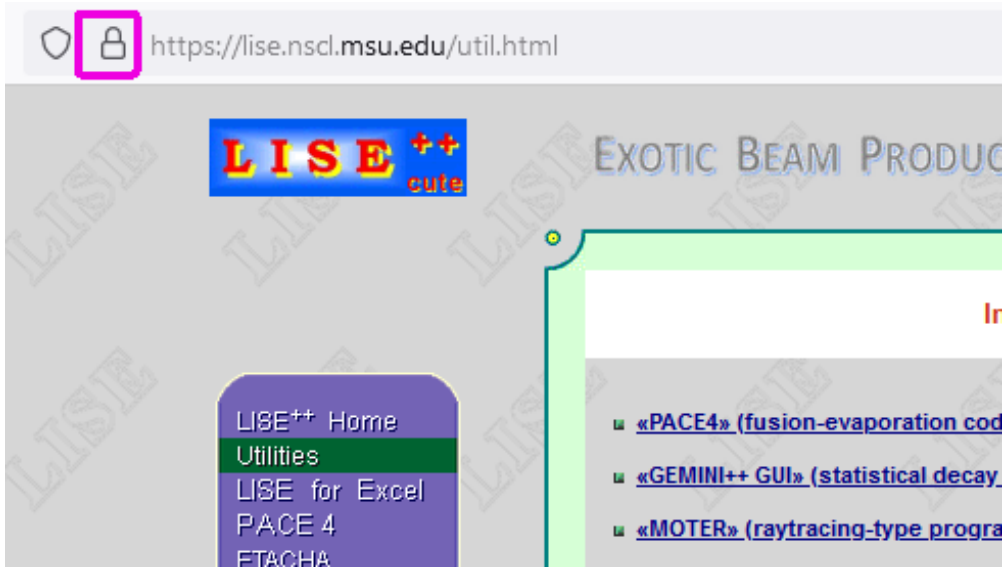


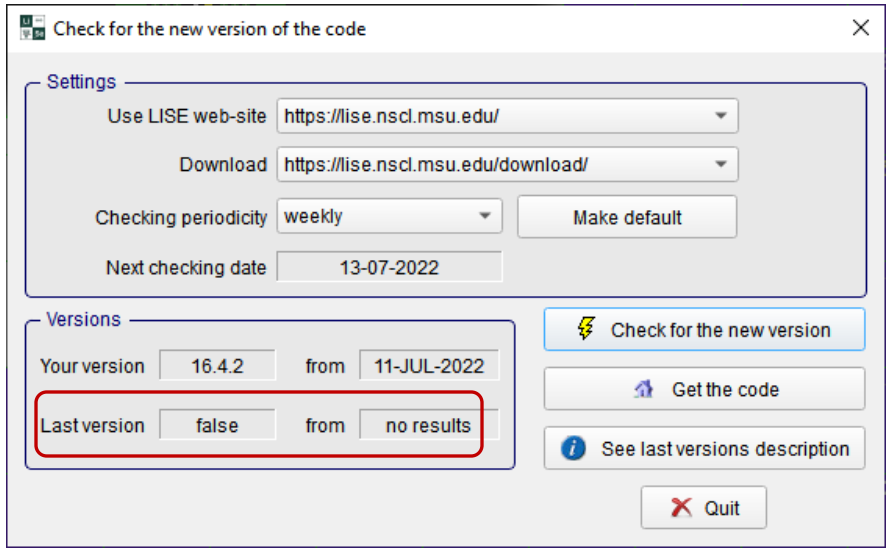
LISE++ site : secure connection

Thanks to Greg Comins!

New approach for visitor statistics.
It allows to get the code downloading statistics.

http → https

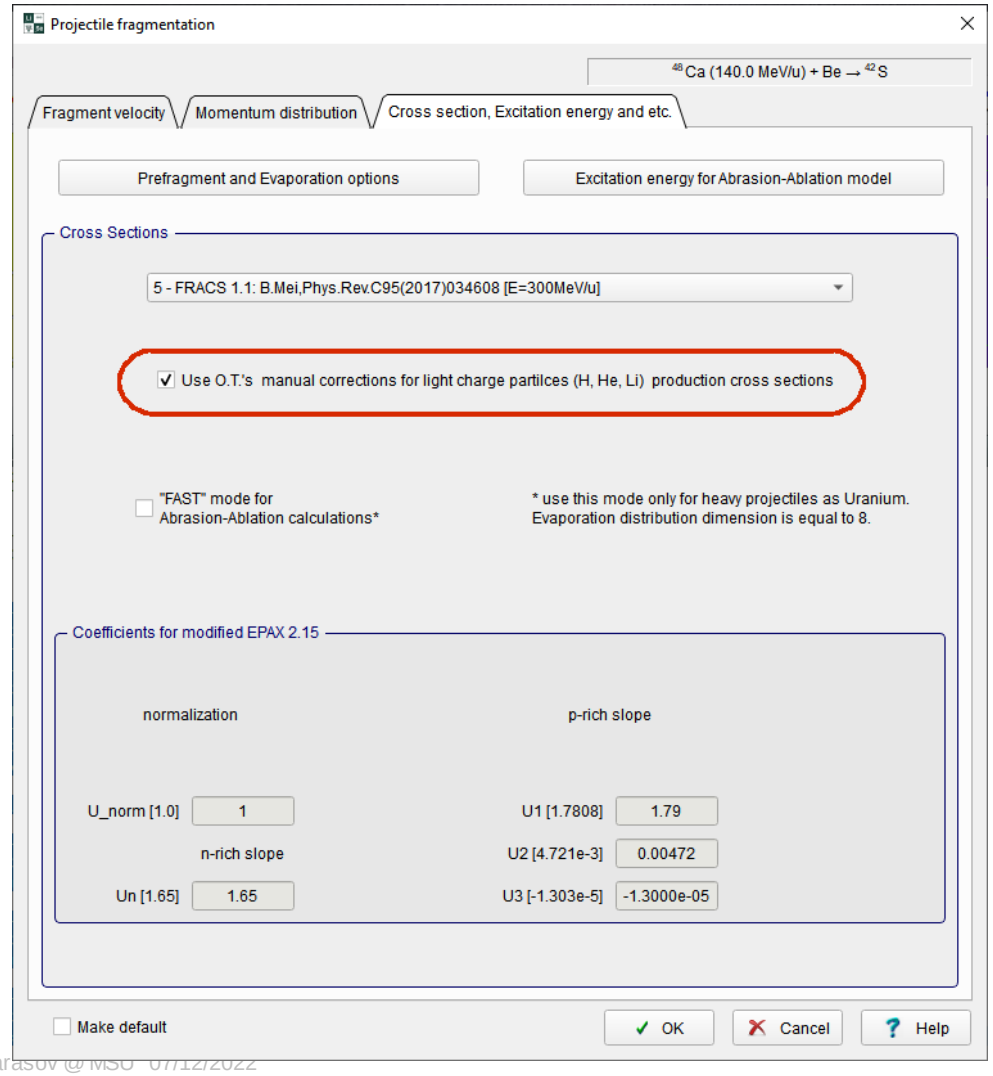




Unfortunately, the “New version” dialog is currently not operating outside the FRIB net. It will be solved soon.

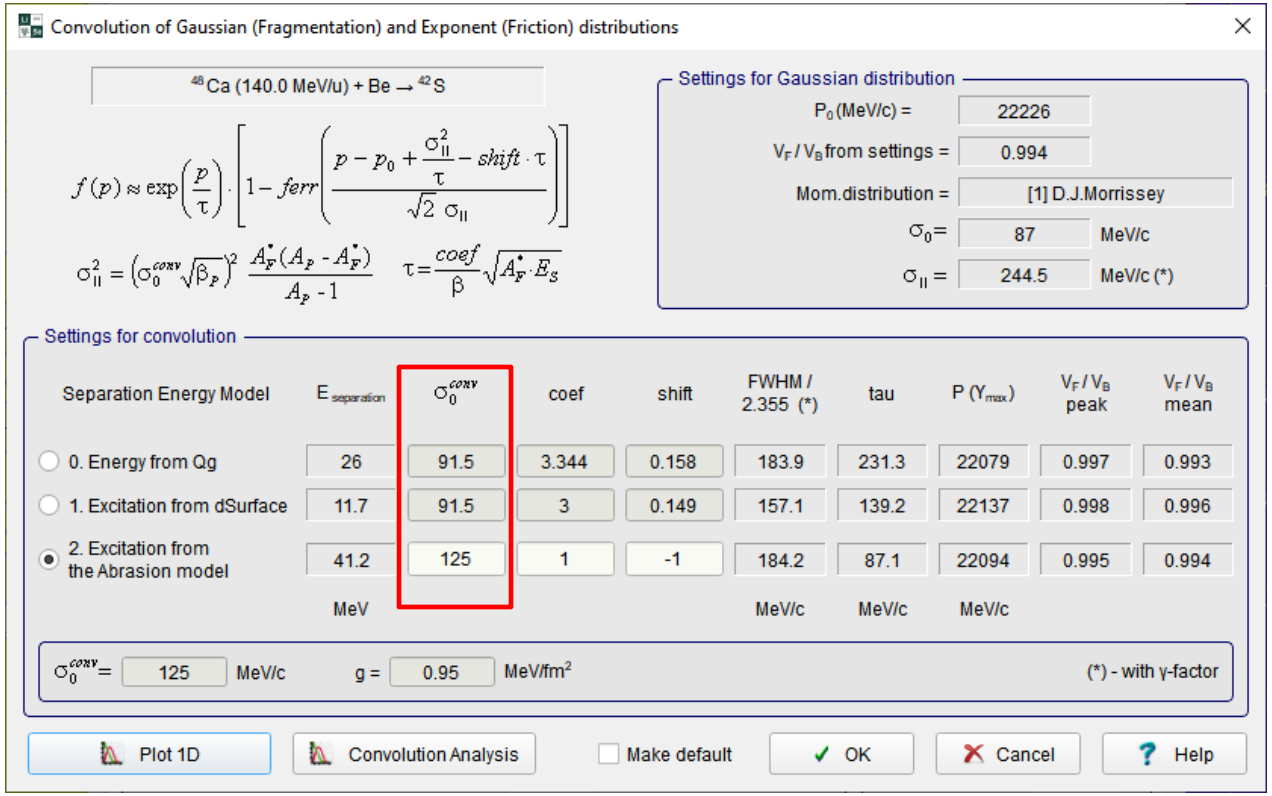
Reaction mechanism: updates

v.16.3.7 :
OT's manual correction for light charge particles production cross section can be applied for all PF models (before it was used only for EPAX2.15-user)

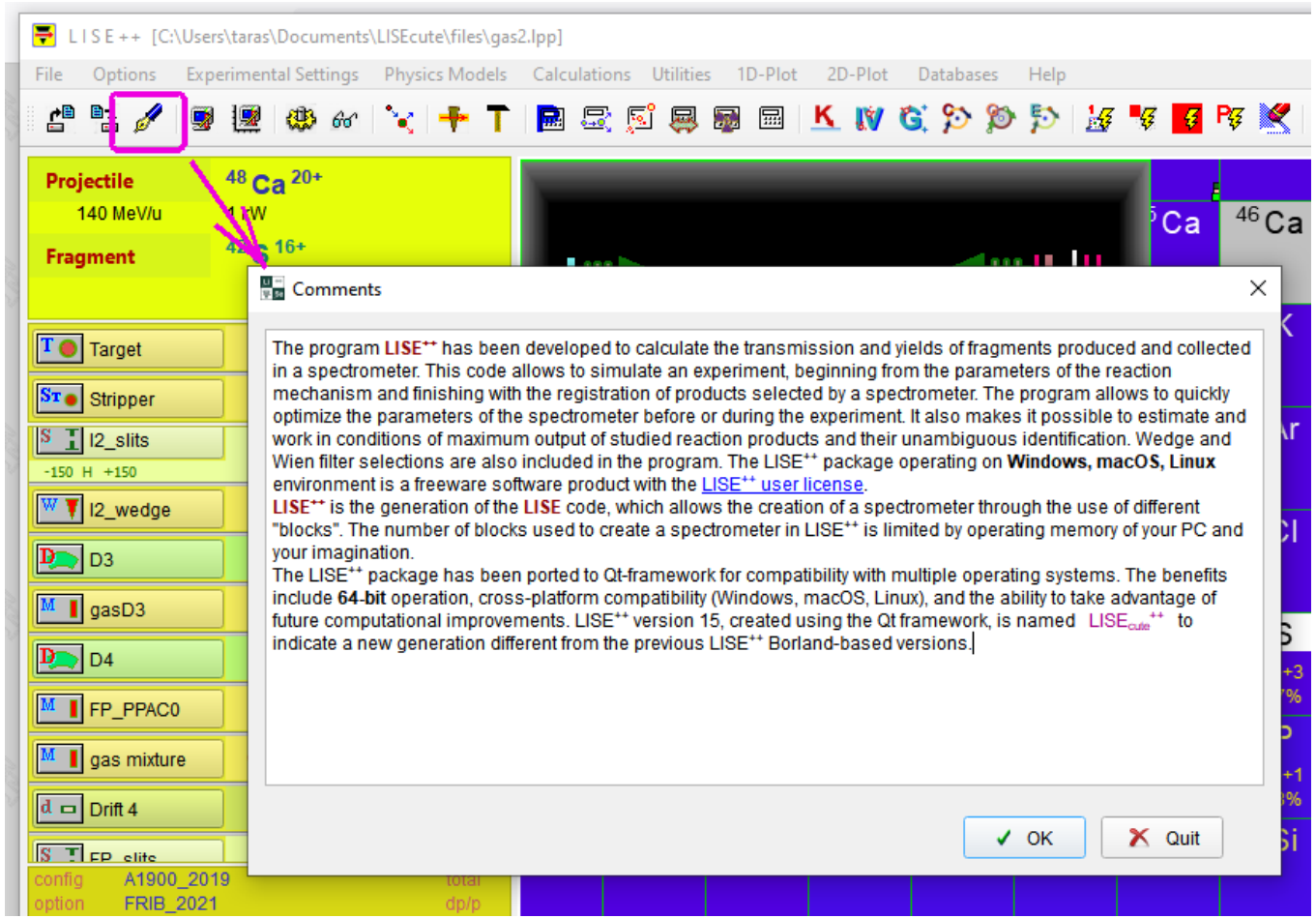


v. 16.2.27 04/01/22

The Convolution model : each option has its own sigma$_0$ value



LISE^{++} file : Multi-line comments



16.2.23 03/29/22
comments action in toolbar; comment icon in file menu

16.2.22 03/29/22
comments: summarize all comments from files in the case of **append** operations

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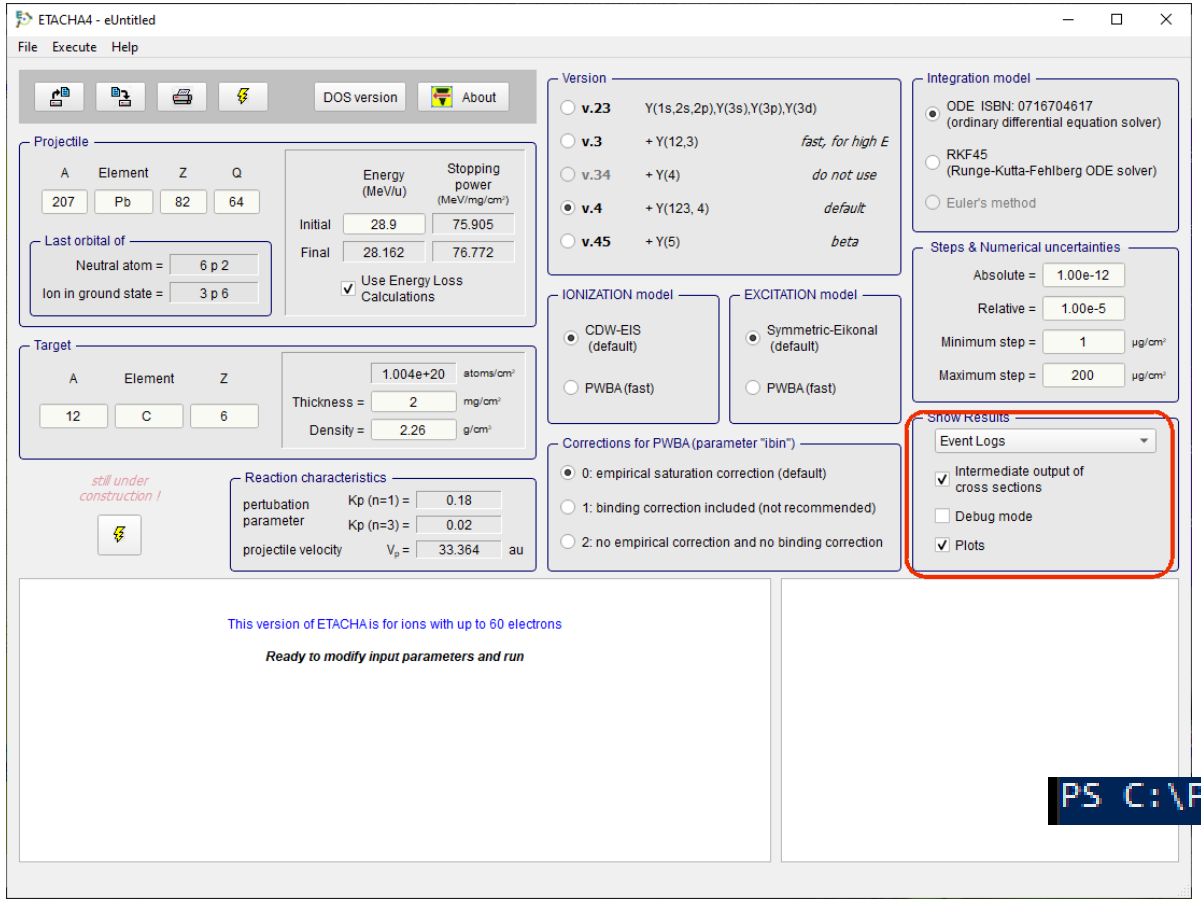
16.2.21 03/29/22
comments: summarize all comments from files in the **lise files list**

ETACHA update

ETACHA 4.4.11	05/30/22	batch mode with command string argument -r
ETACHA 4.4.10	05/30/22	Correction with a density value input from file
ETACHA 4.4.09	05/30/22	Plot option in etacha file

The option -r suppresses the graphs and the input window.



HW's request

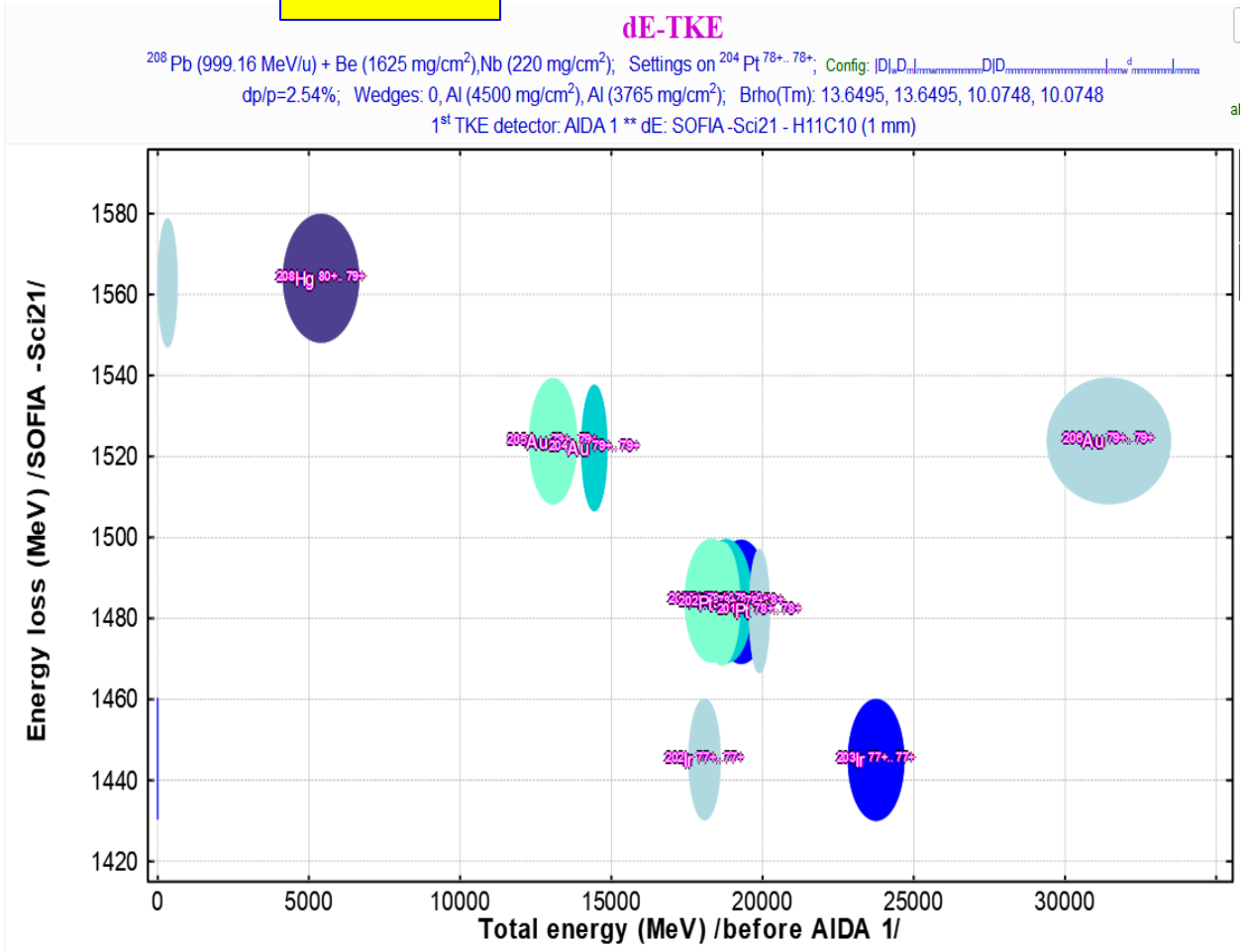
```
PS C:\Program Files\LISEcute> .\ETACHA4.exe D:\test.etacha -r
```

v.16.3.14 : [Fixed] bug in 2D “ellipse” plot

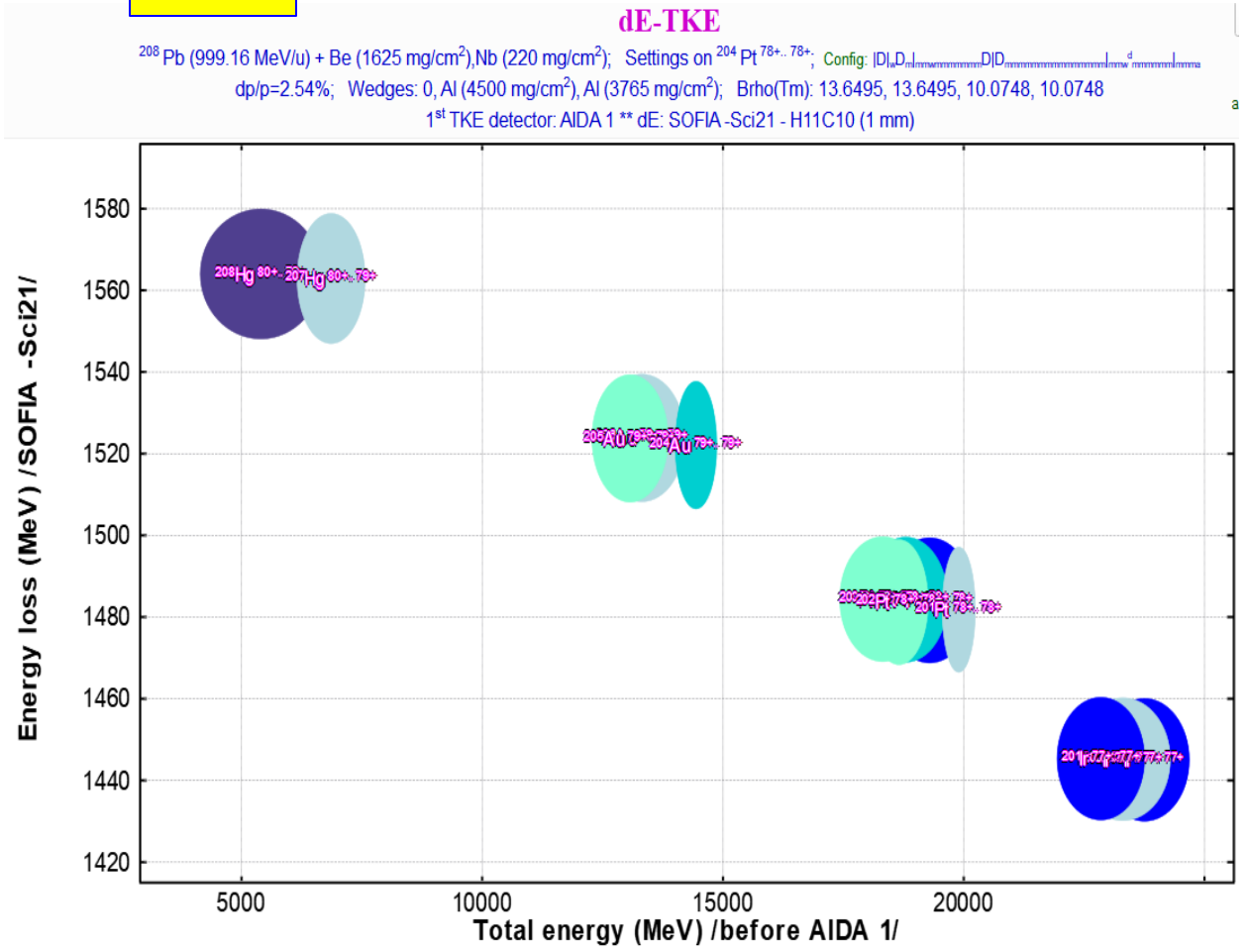
DJM’s request

[corrected] Incorrect extrapolation of energy for isotopes completely outside the slits in the case of transmission calculations by the “ellipse” method

before



after



[Fixed] : bugs

16.3.33 07/09/22
fixed: w_Graph_Envelope crash. (MH)
mostly it has been moved from char*" to QStringSize

16.3.11 05/30/22
InitFN_AF_Dlg::CmPrintTitles correction with titles

16.3.9 05/30/22
misspelling corrections in dialogs d_CN0_scanningEnergy and d_CN0_scanningBrho (MH)

16.3.8 05/11/22
two missing .toString().c.str() in c_Plot_MC.cpp (DB)

16.3.6 04/23/22
correction in angular distribution for the fusion-residual (p,g) case (119I from 118Te beam)

16.3.5 04/23/22
correction in the fusion-residual case for very thin target

16.3.4 04/20/22
* Fixed: crash (only in debug mode) in O-AA_manage.cpp

16.3.2 04/12/22
QSstrcpy and QSstrncpy modifications in win_utilString.cpp (TZ)

16.2.38 04/06/22
initialization beam.Shapes[i] to 1

16.2.30 04/01/22
Fixed: memory leak in read/write blocks

16.2.29 04/01/22
Fixed: bug in file append procedure with high order matrices

16.2.14 03/22/22
Fixed: Results->Transmission A,Z,q1 (summarized by reaction) ==> bug with stripper charge state value

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16.2.13 03/22/22
Fixed: Random wrong initialization of root directory (only in Windows) (MH)

16.2.12 03/22/22
Fixed: bug in d_Setup_Array after privateName value retyping to QString (MH)

List of all updates (v.16.2.12-16.4.3) [1]

16.4.3 07/12/22
PseudoMC update for UseLengthOptics=1

16.4.2 07/11/22
update Draw PlotFile functions for pure ascii output (no Borland, no HTML) (StSc)

16.4.1 07/11/22 changing middle version

16.3.36 07/09/22
modification LengthNameCompound from 61 to 76
modification LengthNameCompoundPlusMass from 78 to 100

16.3.35 07/09/22
udpate FillTitlePlot for Wedge graph name and Brho greek

16.3.34 07/09/22
new BLOCK function bool isLengthBlock() connected to material UseLengthOptics=1, update BLOCK_util for isLengthBlock()

16.3.33 07/09/22
fixed: w_Graph_Envelope crash. (MH)
mostly it has been moved from char*" to QStringSize

16.3.30-32 07/08/22
MC envelope update for UseLengthOptics=1
TOF p_Block_util update for UseLengthOptics=1
p_Block_polynom update for UseLengthOptics=1

16.3.29 07/08/22
MC_options => always opt->MC_Zaxis_material=1,
now opt->MC_Zaxis_material is used as flag in PassMaterialBase for UseLengthOptics=1

16.3.28 07/08/22
d_Setup_Optics -> CmBeamSigmaPlot -> update for UseLengthOptics

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16.3.27 07/08/22
d_Setup_Optics -> CmMatrixEnvelope -> update for UseLengthOptics

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16.3.26 07/08/22
d_Setup_Optics -> CmMatrixFile -> update for UseLengthOptics
correction in p_Block_Compound for om->Unit in the case of drift

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16.3.25 07/05/22
d_Thick dialog update for UseLengthOptics, W_Scheme update for UseLengthOptics, different color and size for materials with lengths
o_Optics update for UseLengthOptics in RecalculateGOM, p_Block_Compound for UseLengthOptics in blockLength for optical matrix

16.3.24 07/05/22
Config_read & write updates for block_material length use in optics
new function templates in BLOCK_Compound
int getUseLengthOptics(){return UseLengthOptics;};
void setUseLengthOptics(int init){ UseLengthOptics = init>0 ? 1 : 0;};

16.3.23 07/05/22
Config_read & write updates for gas mixture molar value

16.3.22 07/03/22
update d_Thickopt_compound to read gas mixture molar value

16.3.21 07/03/22
Ctarget::input_thickness call in Ctarget

16.3.20 06/30/22
Option Show/Hide Cancel-button in Gauge button. used for initial Table creation

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16.3.19 06/30/22
Material dialog - the Z cell is hidden if this component does not exist

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16.3.18 06/30/22
modification of compound.dat file for molecular mass
molecular-Mix mass flag in Ctarget class --> later was erased

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16.3.17 06/30/22 new NNDC isotope link

16.3.16 06/29/22
d_Thick : new CheckBox "Use Length in Optics
BLOCK_Compound : int UseLengthOptics

16.3.15 06/29/22
new icon plotsaveMC, plot_save icons modification (StSc)

16.3.14 06/29/22
c_Plot_2 -> Actions : Save Plot for mode=20 (Ellipse)

16.3.13 06/29/22
c_Graph2_goodies : PassSlits -> CutSpace -> USeAnalysis=false for isotopes out of slits

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16.3.12 06/26/22
c_Graph2_goodies : PassSlits only for optical blocks

16.3.11 05/30/22
InitFN_AF_Dlg::CmPrintTitles correction with titles

16.3.10 05/30/22
Physical Calculator : increasing output precision (AG)

16.3.9 05/30/22
misspelling corrections in dialogs d_CN0_scanningEnergy and d_CN0_scanningBrho (MH)

16.3.8 05/11/22
two missing .toString().c.str() in c_Plot_MC.cpp (DB)

16.3.7 05/06/22
OT's manual correction for light charge particles production cross section can be applied for all PF models

---

16.3.6 04/23/22
correction in angular distribution for the fusion-residual (p,g) case (119I from 118Te beam)

16.3.5 04/23/22
correction in fusion-residual for very thin target

16.3.4 04/20/22
* attempt to use SSL protocol in the new version dialog
* Fixed: crash (debug mode) in O-AA_manage.cpp because of char buff[20];

16.3.3 04/15/22
https: instead http: for LISE site links

16.3.2 04/12/22
QSstrcpy and QSstrncpy modifications in win_utilString.cpp (TZ)

16.3.1 04/06/22
new middle version http:lise.nscl.msu.edu/16/16_3_ExpAbrasion.pdf

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16.2.39 04/06/22
\files\examples\afission\ExpAbrModel.lpp -- settings for Exponential abrasion with EIC parameters

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16.2.38 04/06/22
initialization beam.Shapes[i] to 1

16.2.37 04/06/22
modifications in the Abrasion-Fission dialog and plot

16.2.36 04/06/22
double Sigma0convolution parameter --> double Sigma0convolution() function

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16.2.35 04/04/22
ExpSlope abrasion: Nuclide CS map development

16.2.34 04/04/22
ExpSlope abrasion: including to AAcompare project, ApfExcitatio dialog modification

List of all updates (v.16.2.12-16.4.2) [2]

16.2.33 04/04/22
COSY map default file extensions are "map" and "mat" for loading

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16.2.32 04/02/22
Update of FRIB_2022.lopt (default option file)

16.2.31 04/01/22
global revision in read/write blocks with new elements of Zagolovok and Vegas classes

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16.2.30 04/01/22
Fixed: memory leak in read/write blocks

16.2.29 04/01/22
Fixed: bug in file append procedure with high order matrices

16.2.28 04/01/22
Read/Write --> struct Zagolovok to class, struct Vegas -> class
zero initialization of char * in these classes
High order class : HOL - new function init(const *str)
no more some functions in Vegas class (alloc, free, read_func)

16.2.27 04/01/22
Convolution model : each option has its own sigma0 value

16.2.26 04/01/22
COSY map default file extension is "map"

16.2.25 04/01/22
new default option file FRIB_2022.lopt
correction in "writing rays to file" order in option file

16.2.24 04/01/22
No more modal property for the File comments dialog
writing high order optics element format increased to %.e5

16.2.23 03/29/22
comments action in toolbar; comment icon in file menu

16.2.22 03/29/22
comments summarize comments in the case of append operations

16.2.21 03/29/22
comments summarize comments of all file in lise-files list

16.2.20 03/27/22
direct multipole dialog edit after clicking on the table in the Optics Seup dialog

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16.2.19 03/26/22
global substitution for strReactionRegl function

16.2.18 03/26/22
new Functions QString strReactionRegl(Celement *el, double energy, Compound* compound, Celement *el2, bool);

16.2.17 03/26/22
class Element and Compound -- implementation of QString for name

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16.2.16 03/24/22
new Abrasion model : Exponentional -- only Dialog and initialization

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16.2.15 03/23/22
new function chargeStateTrans(const Ccalc* cc) : product of all charge state transmission values for one ion

---

16.2.14 03/22/22
Fixed: Results->Transmission A,Z,q1 (summarized by reaction) ==> bug with stripper charge state value

---

16.2.13 03/22/22
Fixed: Random wrong initialization of root directory (only in Windows) (MH)

16.2.12 03/22/22
Fixed: bug in d_Setup_Array after privateName value retyping to QString (MH)
ARIS.blf file has been updated by MH
