

v.16.2.11

03/19/22

- ❖ Block names: nickname, official, comments
http://lise.nsci.msu.edu/16/16_2_BlockNames.pdf
- ❖ Q3D "absolute path" envelope
http://lise.nsci.msu.edu/16/16_1_19_AbsolutePath3D.pdf
- ❖ Abrasion-Fission 3EER model : excitation energy choice
- ❖ Important updates
 - Global revision of GEMINI-GUI (fixed serious bug)
 - Fixed bugs
 - Eliminate warnings
 - Multiline file comment
 - Moving from char* to QString
 - Non-latin file path support
 -
- ❖ List of all updates (versions 16.0.2 – 16.2.11)

http://lise.nsci.msu.edu/16/16_2_BlockNames.pdf

Spectrometer design

Block	Nickname	Official	Z-q	Length, m	Enable
Rotate	RA90			0	<input checked="" type="checkbox"/>
** Dipole	C_D1		0	9.694	<input checked="" type="checkbox"/>
slits	DB2 slits			0	<input checked="" type="checkbox"/>
Wedge	DB2 Wedge				<input type="checkbox"/>
** Dipole	C_D2		0	9.745	<input checked="" type="checkbox"/>
FaradayCup	FaradayCup 2				<input type="checkbox"/>
Material	DB3_PPAC1	FS_F2S2:PM_D1658			<input type="checkbox"/>
slits	DB3_slis	FS_F2S2:SLH_D1662		0	<input checked="" type="checkbox"/>
Wedge	DB3_wedge	FS_F2S2:WED_D1660			<input type="checkbox"/>
Material	DB3_PPAC2	FS_F2S2:PM_D1663			<input type="checkbox"/>
Material	DB3_Sci	FS_F2S2:TID_D1664			<input checked="" type="checkbox"/>
FaradayCup	FaradayCup 3	FaradayCup 3			<input type="checkbox"/>
** Dipole	C_D3		0	9.745	<input checked="" type="checkbox"/>
Material	DB4 PPAC				<input type="checkbox"/>
** Dipole	C_D4		0	9.809	<input checked="" type="checkbox"/>
Material	DB5_PPAC1	FS_F3S2:PM_D1849			<input type="checkbox"/>
Material	DB5_PPAC2	FS_F3S2:PM_D1853			<input type="checkbox"/>
slits	DB5_slits	FS_F3S2:SLH/V_1854		0	<input checked="" type="checkbox"/>
Material	DB5_Sci	FS_F3S2:TID_D1855			<input checked="" type="checkbox"/>
Material	DB5_Si_dE	FS_F3S2:ELD_D1857			<input checked="" type="checkbox"/>
Material	DB5_Si_TKE	FS_F3S2:ELD_D1858			<input checked="" type="checkbox"/>
** Dipole	C_D5		0	0	<input type="checkbox"/>

http://lise.nslc.msu.edu/16/16_1_19_AbsolutePath3D.pdf

LISE⁺⁺ *cute* : 3D absolute path

v.16.1.19
01/13/22

Coordinate assignment is important in the case of "absolute path" envelope
Because dipole angle is applied in the X-Z plane

See 3D-envelope (deviations from the central axis)
http://lise.nslc.msu.edu/15/15_23_envelope3D.pdf

3D Monte Carlo Envelope

Envelope center line in 3D-mode

Default : X & Y deviations from the optical line
(Angles of dipoles are not used for drawing plots)

Absolute coordinates
(Angles of dipoles are taken into account) **new**

16.1.40

03/09/22 choice from weighted average or fissile nucleus AA value

New feature

238U (200 MeV/u) + Be
✕

Energy region definitions

Excitation energy region: LOW MIDDLE HIGH

Choose a primary reaction:

Perform transmission calculations for this energy region:

Choose FISSILE nucleus: 236U 230Ac 220At

Z,N,N/Z	92,144 1.565	89,141 1.584	85,135 1.588
Excitation energy (MeV)	38.7	180.2	482.1
Cross section (mb)	423.9	631	513

Restore previous settings

Cross sections sum (mb): 1567.9

LISE++ Abrasion-Ablation calculations to estimate excitation energy regions

1. Calculate 2. Use "All" hints in code 3. Plot

Calculate * Plot use "ALL" hints in code

Hints	LOW	MIDDLE	HIGH	EM fission
LISE++ fissile nucleus from the E_x - CS analysis	238U	230Ac	220At	238U
<input checked="" type="radio"/> A-A fissile nucleus E_x (MeV)	38.9	180.2	482.1	15.9
<input type="radio"/> Weighted region E_x (MeV)	35.9	117.1	513.4	15.9
Cross section (mb)	419.4	631	513	4.5
L+M+H	1563.4	L+M+H+EM	1567.9	use in code**

Region Boundaries

Fission barrier < LOW < 80 Boundary energies for mean values of prefragment excitation energy distributions to split low, middle and high energy regions. Recommendation: $2.3 \cdot E_x$, where E_x is the excitation energy per abraded nucleon.

80 < MIDDLE < 320

320 < HIGH

Default values are 40 & 180 MeV for $E_x=13.3$ MeV/dA, and 80 & 270 MeV for $E_x=27$ MeV/dA.

coef for Z_{beam} = 0.75 $0.1 < coef \leq 1$; recommendation: 0.75 $Z_{stop} = 69$

coef for N_{beam} = 0.8 $0.1 < coef \leq 1$; recommendation: 0.80 $N_{stop} = 117$

determine low Z (element number) where Abrasion-Ablation stops: $Z_{stop} = coef \cdot Z_{beam}$

* - takes about 0.5 - 1 minute ** - Low-excitation Abrasion-Fission and EM fission results will be used together

Previous version used only Weighted region E^* model, the AA fissile nucleus E^* is by default in the new version

- 16.1.48 03/12/22 correction in Compound.cpp for GasMixMolarMass
- 16.1.42 03/12/22 All warnings are solved!**
- 16.1.35 02/10/22 Fixed : bug in Power deposition caused by faraday cup charge state factor use
- 16.1.34 02/10/22 Fixed : bug in Power deposition because of charge states zero factor corrected through initialization of charge_state_factor=1 for all cases (no charge states, no opt.blocks)
- 16.1.28 01/24/22 Fixed: bug in zoom action in the MC envelope mode
- 16.1.27 01/24/22 Correction in d_Setup and d_Setup_optics for block length entry : no make_static
- 16.1.14 01/07/22 Global revision of GEMINI-GUI. A serious bug during the porting process has been fixed. New GEMINI-GUI version 3.0**
- 16.0.4-8 11/16/21
 T* reactions : reactions in materials and wedges ---->
 corrections for W_Graph for input plots in compound in the case of T* reactions
 corrections for EnergyLoss in compound block for T* reactions
 corrections for Energy after block for T* reactions
 corrections for Energy after Stripper for T* reactions
 corrections for T1/2 in Results output
- 16.0.2 11/10/21 corrections in d_Block_Option for compound to eliminate crash



File structure, read/write

- 16.2.2 03/15/22
correction in file open dialog
ARIS lpp_list folder has been added for installation
- 16.1.57 03/12/22
extension lpp and list_lpp together to open file
ARIS_S800.lpp_list in package copy settings
- 16.1.47 03/12/22
elimination of some comments (Yes,No ...) in lise files
- 16.1.46 03/12/22
no more NULL lines in lise files (cosy file, profile file and so on)
- 16.1.45 03/12/22
config read-write : new two block lines for general segment

OS compatability

- 16.1.32 02/03/22
updates for macOS operations
- 16.1.10 12/29/21
updates for compatibility with linux
- 16.1.2 12/05/21
LISE satellites global update to support non-latin file path
- 16.1.1 12/03/21
LISE++ global update to support non-latin file path

Monte Carlo

- 16.1.33 02/04/22
MC dialog : MC write to file enabled option instead visible
Ray dialog : default "comma" instead "tab"
checkbox for random integer values
- 16.1.26 01/24/22
MC outside rays: rewind ray file, if the "continue" button pressed
- 16.1.24 01/23/22
Read & Write of NameIsotopeListFile & NameOutsideRayFile in LISE file
- 16.1.23 01/23/22
MC options : reverse flag for envelope to for correct angular spline calculations
- 16.1.22 01/23/22
MC : stop reading file if EOF takes place in no-cycling mode
- 16.1.21 01/23/22
d_MC : rays and isotopes buttons corrections
- 16.0.3 11/11/21
"MC write to file": values written to file also for particles stopped in detector

char* → QString

16.2.5 03/19/22
comment from char* to Qstring, multiline comment

16.2.4 03/19/22
int AddPathToFileName(QString &filename, const QString &path) ==>
int AddPathToFileName(QString &filename, const QString &path);
int ErasePathFromFileName(QString &filename, const QString &path)
==> int ErasePathFromFileName(QString &filename, const QString
&path);
QString GetShortFileName(const QString &source, int opt=0) ==>
QString GetShortFileName(const QString &source, int opt=0)
all LISE date functions : from char* to QString

no more "QString *" at initialization, file_nameCfgBuffer from char* to
Qstring, file_nameOptBuffer from char* to Qstring, CheckingDate from
char[] to Qstring

16.1.41 03/11/22
Block : moving from char* to QString for privateName
class_CalcUnit : name -> moving from char* to QString
class BlockPlotPosition : name -> moving from char* to QString

Block Names

- 16.2.11 03/19/22
Creation of ARIS.blf template in files/examples/FRIB and
putting its name in the Documents-copy array
- 16.2.10 03/19/22 Development of Block name replace utility with use of BLF
- 16.2.9 03/19/22 Development of Block name update utility with use of BLF
- 16.2.8 03/19/22 Development of Block name converter with use of BLF
- 16.2.3 03/18/22 Correction in Block List File creation procedure
- 16.1.56 03/12/22 creation of Block list file
- 16.1.55 03/12/22 joint title for material block dialogs
- 16.1.54 03/12/22 joint title for optics block dialogs
- 16.1.53 03/12/22 menu actions to create blocks exchange file
- 16.1.52 03/12/22 d_Setup,d_SetupOptics dialog: new policy for columns
- 16.1.51 03/12/22 d_Setup dialog: new button exchange
- 16.1.50 03/12/22 d_SetupOptics dialog modification for new names
- 16.1.49 03/12/22 d_Setup dialog modification for new names
- 16.1.43 03/12/22 Block option dialog modified for Official and Comment strings
- 16.1.41 03/11/22 Block : new QString OfficialName, new Comments

16.2.11 03/19/22

Creation of ARIS.blf template in files/examples/FRIB and putting its name in the Documents-copy array

16.2.10 03/19/22

Development of Block name replace utility with use of BLF

16.2.9 03/19/22

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16.2.8 03/19/22

Development of Block name converter with use of BLF

16.2.7 03/19/22

Splitting MainWindow_file to MainWindow_file and MainWindow_fileTransport
Link to BLF documentation

16.2.6 03/19/22

symbol "*" to show modifications from saved LISE configuration

16.2.5 03/19/22

comment from char* to QString
multiline comment

16.2.4 03/19/22

int AddPathToFileName(QString &filename, const QString &path) ==> int AddPathToFileName(QString &filename, const QString &path);
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no more "QString *" at initialization
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CheckingDate from char[] to QString

16.2.3 03/18/22

Correction in Block List File creation procedure

16.2.2 03/15/22

correction in file open dialog
ARIS lpp_list folder has been added for installation
all calculators have got the windows min and max buttons
MC axis limits to work with 100 GeV/u beams

16.2.1 03/13/22

middle version changed

16.1.57 03/12/22

extension lpp and list_lpp together to open file
ARIS_S800.lpp_list in package copy settings

16.1.56 03/12/22

creation of Block list file

16.1.55 03/12/22

joint title for material block dialogs

16.1.54 03/12/22

joint title for optics block dialogs

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menu actions to create blocks exchange file

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d_Setup,d_SetupOptics dialog: new policy for columns

16.1.51 03/12/22

d_Setup dialog: new button exchange

16.1.50 03/12/22

d_SetupOptics dialog modification for new names

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16.1.46 03/12/22

no more NULL lines in lise files (cosy file, profile file and so on)

16.1.45 03/12/22

config read-write : new two block lines for general segment

16.1.44 03/12/22

no more turn Y-title in the plot option dialog

16.1.43 03/12/22

Block option dialog modified for Official and Comment strings

16.1.42 03/12/22

all warnings are solved!

16.1.41 03/11/22

Block : moving from char* to QString for privateName
new QString OfficialName
new Comments

class_CalcUnit : name -> moving from char* to QString
class BlockPlotPosition : name -> moving from char* to QString

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3EER : excitation energy choice from weighted average or fissile nucleus AA value

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Fixed : bug in Power deposition caused by faraday cup charge state factor use

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MC dialog : MC write to file enabled option instead visible
Ray dialog : default "comma" instead "tab"
checkbox for random integer values

16.1.32 02/03/22
updates for macOS operations

16.1.31 01/26/22
CS, Spectra and MARS calibration files are copied to the documents directory

16.1.30 01/26/22
restrictions 5,000 lines to download to LISE file viewer

16.1.29 01/24/22
prevention for all matrix[address] strings for memory leak in graph-plot functions

16.1.28 01/24/22
Fixed: bug in zoom action in the MC envelope mode

16.1.27 01/24/22
Correction in d_Setup and d_Setup_optics for block length entry : no make_static

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Q3D "absolute path" envelope has been completed

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A serious bug during the porting process has been fixed
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16.1.10 12/29/21
updates for compatibility with linux

16.1.8 12/13/21
Wien dialog: calibration option

16.1.7 12/12/21
Debug lines were cleaned

16.1.2 12/05/21
LISE satellites global update to support non-latin file path

16.1.1 12/03/21
LISE++ global update to support non-latin file path

16.0.11-12 11/28/21
Ellipse method: simple analytical method to calculate fragment transmission used in 2d-plots, in File menu "Output results", in the "Goodies" dialog ---->
using rotation blocks in the ellipse plot method
using fragment angles in ellipse plot method: important for extended configurations
(due to existing matrices with defocusing elements)

16.0.9 11/26/21
Calibration file absence message is appeared only in MS Windows case

16.0.4-8 11/16/21
T* reactions : reactions in materials and wedges ---->
corrections for W_Graph for input plots in compound in the case of T* reactions
corrections for EnergyLoss in compound block for T* reactions
corrections for Energy after block for T* reactions
corrections for Energy after Stripper for T* reactions
corrections for T1/2 in Results output

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"MC write to file": values written to file also for particles stopped in detector

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corrections in d_Block_Option for compound to eliminate crash