

SuperNEMO Simulation Variant parameters (version 2.1)

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<i>SuperNEMO simulation configuration parameters</i>	

General informations

- Display name : *SuperNEMO Geant4 simulation variant repository*
- Organization : "snemo"
- Application : "falaise"
- Number of variant registries: 4

Registry "geometry"

SuperNEMO demonstrator geometry

- Display name: "Demonstrator geometry"
- Top variant model: "geometry.VM"
- Number of supported parameters: 16
 - "layout" (description)
 - "layout/if_basic/magnetic_field" (description)
 - "layout/if_basic/magnetic_field/is_active/type" (description)
 - "layout/if_basic/magnetic_field/is_active/type/if_mapped/map" (description)
 - "layout/if_basic/magnetic_field/is_active/type/if_mapped/map/if_user/map_file" (description)
 - "layout/if_basic/magnetic_field/is_active/type/if_mapped/z_inverted" (description)
 - "layout/if_basic/magnetic_field/is_active/type/if_uniform_vertical/magnitude" (description)
 - "layout/if_basic/magnetic_field/is_active/type/if_uniform_vertical/direction" (description)
 - "layout/if_basic/source_layout" (description)

- "layout/if_basic/source_layout/if_basic/thickness" (description)
- "layout/if_basic/source_layout/if_basic/material" (description)
- "layout/if_basic/source_calibration" (description)
- "layout/if_basic/source_calibration/is_active/type" (description)
- "layout/if_basic/shielding" (description)
- "layout/if_half_commissioning/gap" (description)
- "calo_film_thickness" (description)

Description of parameters

1. Parameter "layout" :

The geometry layout of the demonstrator module

- Full path: "geometry:layout"
- Model: "demonstrator.geometry.layout.PM"
- Type: string
- Mutability: variable
- Associated variants :
 - "if_basic" (model: "demonstrator.geometry.basic.VM")
 - "if_half_commissioning" (model: "demonstrator.geometry.half_commissioning.VM")
- Variable mode: enumeration
- Supported string values:
 - "Basic" :
 - Triggered variant: "if_basic"
 - "HalfCommissioning" :
 - Triggered variant: "if_half_commissioning"
- Default value: "Basic"

2. Parameter "layout/if_basic/magnetic_field" :

The activation flag of the magnetic field

- Full path: "geometry:layout/if_basic/magnetic_field"
- Model: "magnetic_field.on_off.PM"
- Type: boolean
- Mutability: variable
- Associated variants :
 - "is_active" (model: "magnetic_field.description.VM")
 - "is_inactive" (model: "datatools::basic::is_off.VM")
- Variable mode: enumeration
- Supported boolean values:
 - **false** : *No magnetic field*
 - Triggered variant: "is_inactive"
 - **true** : *Apply a magnetic field*
 - Triggered variant: "is_active"
- Default value: true

3. Parameter "layout/if_basic/magnetic_field/is_active/type" :

The type of the magnetic field

- Full path: "geometry:layout/if_basic/magnetic_field/is_active/type"
- Model: "magnetic_field.type.PM"
- Type: string

- Mutability : variable
- Associated variants :
 - "if_mapped" (model: "magnetic_field.mapped.VM")
 - "if_uniform_vertical" (model: "magnetic_field.uniform_vertical.VM")
- Variable mode : enumeration
- Supported string values:
 - **"Mapped"** : *Magnetic field is mapped*
 - Triggered variant : "if_mapped"
 - **"UniformVertical"** : *Magnetic field is uniform vertical*
 - Triggered variant : "if_uniform_vertical"
- Default value : "UniformVertical"

4. Parameter "layout/if_basic/magnetic_field/is_active/type/if_mapped/map" :

Selection of the mapped magnetic field

- Full path: "geometry:layout/if_basic/magnetic_field/is_active/type/if_mapped/map"
- Model: "magnetic_field.mapped.map.PM"
- Type: string
- Mutability : variable
- Associated variants :
 - "if_map0" (model: "magnetic_field.mapped.map.map0.VM")
 - "if_user" (model: "magnetic_field.mapped.map.user.VM")
- Variable mode : enumeration
- Supported string values:
 - **"Map0"** : *Registered mapped magnetic field #0*
 - Triggered variant : "if_map0"
 - **"User"** : *User defined mapped magnetic field*
 - Triggered variant : "if_user"
- Default value : "Map0"

5. Parameter "layout/if_basic/magnetic_field/is_active/type/if_mapped/map/if_user/map_file" :

The mapping file of the user defined mapped magnetic field

- Full path: "geometry:layout/if_basic/magnetic_field/is_active/type/if_mapped/map/if_user/map_file"
- Model: "magnetic_field.mapped.map.user.map_file.PM"
- Type: string (as input path)
- Mutability : variable
- Variable mode : free

6. Parameter "layout/if_basic/magnetic_field/is_active/type/if_mapped/z_inverted" :

The Z inversion of the mapped magnetic field

- Full path: "geometry:layout/if_basic/magnetic_field/is_active/type/if_mapped/z_inverted"
- Model: "magnetic_field.mapped.z_inverted.PM"
- Type: boolean
- Mutability : variable
- Associated variants :
 - "is_active" (model: "datatools::basic::is_on.VM")
 - "is_inactive" (model: "datatools::basic::is_off.VM")
- Variable mode : enumeration
- Supported boolean values:

- **false**: *The mapped magnetic field points to the Z>0 axis*
 - Triggered variant: "is_inactive"
- **true**: *The mapped magnetic field points to the Z<0 axis*
 - Triggered variant: "is_active"

■ Default value: false

7. Parameter "layout/if_basic/magnetic_field/is_active/type/if_uniform_vertical/magnitude":

The magnitude of the magnetic field

- Full path: "geometry:layout/if_basic/magnetic_field/is_active/type/if_uniform_vertical/magn
- Model: "magnetic_field.uniform_vertical.magnitude.PM"
- Type: real
- Unit label: "magnetic_flux_density"
- Preferred unit: "gauss"
- Real precision: 0 gauss
- Mutability: variable
- Variable mode: interval
- Domain: [0.1 gauss;100 gauss]
- Default value: 25 gauss

8. Parameter "layout/if_basic/magnetic_field/is_active/type/if_uniform_vertical/direction":

The direction of the magnetic field

- Full path: "geometry:layout/if_basic/magnetic_field/is_active/type/if_uniform_vertical/dire
- Model: "magnetic_field.uniform_vertical.direction.PM"
- Type: string
- Mutability: variable
- Variable mode: enumeration
- Supported string values:
 - "+z"
 - "-z"
- Default value: "+z"

9. Parameter "layout/if_basic/source_layout":

The layout of the source foil

- Full path: "geometry:layout/if_basic/source_layout"
- Model: "source_betabeta.layout.PM"
- Type: string
- Mutability: variable
- Associated variants:
 - "if_basic" (model: "source_betabeta.basic.VM")
- Variable mode: enumeration
- Supported string values:
 - "Basic":
 - Triggered variant: "if_basic"
- Default value: "Basic"

10. Parameter "layout/if_basic/source_layout/if_basic/thickness":

The thickness of the source foil

- Full path: "geometry:layout/if_basic/source_layout/if_basic/thickness"
- Model: "source_betabeta.foil_thickness.PM"
- Type: real
- Unit label: "length"
- Preferred unit: "um"
- Real precision: 0 um
- Mutability: variable
- Variable mode: interval
- Domain: [5 um; 500 um]
- Default value: 250 um

11. Parameter "layout/if_basic/source_layout/if_basic/material":

The material of the source foil

- Full path: "geometry:layout/if_basic/source_layout/if_basic/material"
- Model: "source_betabeta.foil_material.PM"
- Type: string
- Mutability: variable
- Associated variants:
 - "if_ca48" (model: "source_betabeta.basic.ca48.VM")
 - "if_mo100" (model: "source_betabeta.basic.mo100.VM")
 - "if_nd150" (model: "source_betabeta.basic.nd150.VM")
 - "if_se82" (model: "source_betabeta.basic.se82.VM")
- Variable mode: enumeration
- Supported string values:
 - "Ca48":
 - Triggered variant: "if_ca48"
 - "Mo100":
 - Triggered variant: "if_mo100"
 - "Nd150":
 - Triggered variant: "if_nd150"
 - "Se82":
 - Triggered variant: "if_se82"
- Default value: "Se82"

12. Parameter "layout/if_basic/source_calibration":

The activation flag of the source calibration system

- Full path: "geometry:layout/if_basic/source_calibration"
- Model: "source_calibration.off_on.PM"
- Type: boolean
- Mutability: variable
- Associated variants:
 - "is_active" (model: "source_calibration.description.VM")
 - "is_inactive" (model: "datatools::basic::is_off.VM")
- Variable mode: enumeration
- Supported boolean values:
 - false:
 - Triggered variant: "is_inactive"
 - true:
 - Triggered variant: "is_active"

- Default value : false

13. Parameter "layout/if_basic/source_calibration/is_active/type" :

The type of the source calibration setup

- Full path: "geometry:layout/if_basic/source_calibration/is_active/type"
- Model: "source_calibration.type.PM"
- Type: string
- Mutability: variable
- Associated variants :
 - "if_bi207" (model: "source_calibration.bi207.basic.VM")
- Variable mode: enumeration
- Supported string values:
 - "Bi207" :
 - Triggered variant : "if_bi207"
- Default value : "Bi207"

14. Parameter "layout/if_basic/shielding" :

The activation flag of the shielding

- Full path: "geometry:layout/if_basic/shielding"
- Model: "datatools::basic::on_off.PM"
- Type: boolean
- Mutability: variable
- Associated variants :
 - "is_off" (model: "datatools::basic::is_off.VM")
 - "is_on" (model: "datatools::basic::is_on.VM")
- Variable mode: enumeration
- Supported boolean values:
 - false:
 - Triggered variant : "is_off"
 - true:
 - Triggered variant : "is_on"
- Default value : true

15. Parameter "layout/if_half_commissioning/gap" :

The calibration source distance to closing plate

- Full path: "geometry:layout/if_half_commissioning/gap"
- Model: "demonstrator.geometry.half_commissioning.gap.PM"
- Type: real
- Unit label: "length"
- Preferred unit : "mm"
- Real precision : 0 mm
- Mutability: variable
- Variable mode: interval
- Domain: [0.25 mm;1000 mm]
- Default value : 0.25 mm

16. Parameter "calo_film_thickness" :

The thickness of the calorimeter tightness film

- Full path: "geometry:calo_film_thickness"
- Model: "demonstrator.geometry.calo_tightness_film_thickness.PM"
- Type: real
- Unit label: "length"
- Preferred unit: "um"
- Real precision: 0 um
- Mutability: variable
- Variable mode: interval
- Domain: [0 um;100 um]
- Default value: 25 um

Registry "vertexes"

SuperNEMO demonstrator vertex generation

- Display name: "Vertex generation"
- Top variant model: "vertexes.VM"
- Number of supported parameters: 8
 - "generator" (description)
 - "generator/if_free_spot/x" (description)
 - "generator/if_free_spot/y" (description)
 - "generator/if_free_spot/z" (description)
 - "generator/if_half_commissioning_single_spot/column" (description)
 - "generator/if_half_commissioning_single_spot/row" (description)
 - "generator/if_source_calibration_single_spot/track" (description)
 - "generator/if_source_calibration_single_spot/position" (description)

Description of parameters

1. Parameter "generator":

The selected primary vertex generator

- Full path: "vertexes:generator"
- Model: "vertexes.generator.PM"
- Type: string
- Mutability: variable
- Associated groups:
 - "Calibration"
 - "HalfCommissioning"
 - "Hall"
 - "OpticalModule"
 - "Shielding"
 - "Source"
 - "Tracker"
 - "Tracker0"
 - "Tracker1"
- Associated variants:
 - "if_free_spot" (model: "free_spot_vertex.VM")
 - "if_half_commissioning_single_spot" (model: "half_commissioning.single_spot.VM")
 - "if_source_calibration_single_spot" (model: "source_calibration.single_spot.VM")

■ Variable mode : enumeration

■ Supported string values:

- **"anode_wire_bulk"** : Vertex generation from the bulk volume of all anode wires
 - Group : "Tracker"
- **"anode_wire_surface"** : Vertex generation from the surface of all anode wires
 - Group : "Tracker"
- **"calo_5inch_back_scin_bulk"** : Vertex generation from the bulk volume of the back part of all main calorimeter scintillator blocks with 5" PMT
 - Group : "OpticalModule"
- **"calo_5inch_front_scin_bulk"** : Vertex generation from the bulk volume of the front part of all main calorimeter scintillator blocks with 5" PMT
 - Group : "OpticalModule"
- **"calo_5inch_scin_bulk"** : Vertex generation from the bulk volume of all main calorimeter scintillator blocks with 5" PMT
 - Group : "OpticalModule"
- **"calo_8inch_back_scin_bulk"** : Vertex generation from the bulk volume of the back part of all main calorimeter scintillator blocks with 8" PMT
 - Group : "OpticalModule"
- **"calo_8inch_front_scin_bulk"** : Vertex generation from the bulk volume of the front part of all main calorimeter scintillator blocks with 8" PMT
 - Group : "OpticalModule"
- **"calo_8inch_scin_bulk"** : Vertex generation from the bulk volume of all main calorimeter scintillator blocks with 8" PMT
 - Group : "OpticalModule"
- **"calo_wrapper_bulk"** : Vertex generation from the bulk volume of the wrapper of all main calorimeter scintillator blocks
 - Group : "OpticalModule"
- **"calo_wrapper_surface"** : Vertex generation from the surface of the wrapper of all main calorimeter scintillator blocks
 - Group : "OpticalModule"
- **"commissioning_all_spots"** : Vertex generation from from a commissioning spot
 - Group : "HalfCommissioning"
- **"commissioning_single_spot"** : Vertex generation from from a commissioning spot
 - Triggered variant : "if_half_commissioning_single_spot "
 - Group : "HalfCommissioning"
- **"experimental_hall_bulk"** : Vertex generation from the bulk volume (air) of the experimental hall
 - Group : "Hall"
- **"experimental_hall_ground_bulk"** : Vertex generation from the bulk volume of the experimental hall's ground
 - Group : "Hall"
- **"experimental_hall_ground_floor"** : Vertex generation from the top surface (floor) of the experimental hall's ground
 - Group : "Hall"
- **"experimental_hall_roof"** : Vertex generation from the top surface (roof) of the experimental hall
 - Group : "Hall"
- **"experimental_hall_surface"** : Vertex generation from all internal surfaces of the experimental hall
 - Group : "Hall"
- **"feedthrough_pins_bulk_all_spots"** : Vertex generation from the bulk volume of all tracker feedthrough pins
 - Group : "Tracker"
- **"feedthrough_pins_bulk_side_0_bottom"** : Vertex generation from the bulk volume of the tracker feedthrough pins on side 0, bottom
 - Group : "Tracker0"
- **"feedthrough_pins_bulk_side_0_top"** : Vertex generation from the bulk volume of the tracker feedthrough pins on side 0, top

- Group: "Tracker0"
- **"feedthrough_pins_bulk_side_1_bottom"**: Vertex generation from the bulk volume of the tracker feedthrough pins on side 1, bottom
 - Group: "Tracker1"
- **"feedthrough_pins_bulk_side_1_top"**: Vertex generation from the bulk volume of the tracker feedthrough pins on side 1, top
 - Group: "Tracker1"
- **"field_wire_bulk"**: Vertex generation from the bulk volume of all field wires
 - Group: "Tracker"
- **"field_wire_surface"**: Vertex generation from the surface of all field wires
 - Group: "Tracker"
- **"free_spot"**: Vertex generation from an arbitrary spot in the geometry
 - Triggered variant: "if_free_spot"
- **"gveto_wrapper_bulk"**: Vertex generation from the bulk volume of the wrapper of all gamma veto scintillator blocks
 - Group: "OpticalModule"
- **"gveto_wrapper_surface"**: Vertex generation from the surface of the wrapper of all gamma veto scintillator blocks
 - Group: "OpticalModule"
- **"shielding_all_bulk"**: Vertex generation from the bulk volume of all shielding walls
 - Group: "Shielding"
- **"shielding_all_internal_surfaces"**: Vertex generation from internal surfaces of the all shielding walls
 - Group: "Shielding"
- **"shielding_back_front_bulk"**: Vertex generation from the bulk volume of the back/front shielding walls
 - Group: "Shielding"
- **"shielding_back_front_internal_surface"**: Vertex generation from all internal surfaces of the back/front shielding walls
 - Group: "Shielding"
- **"shielding_bottom_bulk"**: Vertex generation from the bulk volume of the bottom shielding wall
 - Group: "Shielding"
- **"shielding_bottom_internal_surface"**: Vertex generation from the internal surface of the bottom shielding wall
 - Group: "Shielding"
- **"shielding_left_right_bulk"**: Vertex generation from the bulk volume of the left/right shielding walls
 - Group: "Shielding"
- **"shielding_left_right_internal_surface"**: Vertex generation from all internal surfaces of the left/right shielding walls
 - Group: "Shielding"
- **"shielding_top_bulk"**: Vertex generation from the bulk volume of the top shielding wall
 - Group: "Shielding"
- **"shielding_top_internal_surface"**: Vertex generation from the internal surface of the top shielding wall
 - Group: "Shielding"
- **"source_calibration_all_spots"**: Vertex generation from the bulk volume of all source calibration spots
 - Group: "Calibration"
- **"source_calibration_single_spot"**: Vertex generation from the bulk volume of all source calibration spots
 - Triggered variant: "if_source_calibration_single_spot"
 - Group: "Calibration"
- **"source_pads_bulk"**: Vertex generation from the bulk volume of all source pads
 - Group: "Source"
- **"source_pads_external_bulk"**: Vertex generation from the bulk volume of all outer source pads

- Group: "Source"
- **"source_pads_external_surface"**: Vertex generation from the surface of all outer source pads
 - Group: "Source"
- **"source_pads_internal_bulk"**: Vertex generation from the bulk volume of all inner source pads
 - Group: "Source"
- **"source_pads_internal_surface"**: Vertex generation from the surface of all inner source pads
 - Group: "Source"
- **"source_pads_surface"**: Vertex generation from the surface of all source pads
 - Group: "Source"
- **"xcalo_wrapper_bulk"**: Vertex generation from the bulk volume of the wrapper of all X-wall calorimeter scintillator blocks
 - Group: "OpticalModule"
- **"xcalo_wrapper_surface"**: Vertex generation from the surface of the wrapper of all X-wall calorimeter scintillator blocks
 - Group: "OpticalModule"
- Default value: "free_spot"

2. Parameter "generator/if_free_spot/x":

The vertex X coordinate

- Full path: "vertexes:generator/if_free_spot/x"
- Model: "free_vertex.coordinate.PM"
- Type: real
- Unit label: "length"
- Preferred unit: "mm"
- Real precision: 0 mm
- Mutability: variable
- Variable mode: interval
- Domain: [-10 m;10 m]
- Default value: 0 mm

3. Parameter "generator/if_free_spot/y":

The vertex Y coordinate

- Full path: "vertexes:generator/if_free_spot/y"
- Model: "free_vertex.coordinate.PM"
- Type: real
- Unit label: "length"
- Preferred unit: "mm"
- Real precision: 0 mm
- Mutability: variable
- Variable mode: interval
- Domain: [-10 m;10 m]
- Default value: 0 mm

4. Parameter "generator/if_free_spot/z":

The vertex Z coordinate

- Full path: "vertexes:generator/if_free_spot/z"
- Model: "free_vertex.coordinate.PM"
- Type: real
- Unit label: "length"

- Preferred unit : "mm"
- Real precision : 0 mm
- Mutability : variable
- Variable mode : interval
- Domain: [-10 m;10 m]
- Default value : 0 mm

5. Parameter "generator/if_half_commissioning_single_spot/column":

Vertex horizontal position

- Full path: "vertexes:generator/if_half_commissioning_single_spot/column"
- Model: "half_commissioning.single_spot.column.PM"
- Type: integer
- Mutability : variable
- Variable mode : interval
- Domain: [0;112]
- Default value : 0

6. Parameter "generator/if_half_commissioning_single_spot/row":

Vertex vertical position

- Full path: "vertexes:generator/if_half_commissioning_single_spot/row"
- Model: "half_commissioning.single_spot.row.PM"
- Type: integer
- Mutability : variable
- Variable mode : interval
- Domain: [0;4]
- Default value : 0

7. Parameter "generator/if_source_calibration_single_spot/track":

Calibration track number

- Full path: "vertexes:generator/if_source_calibration_single_spot/track"
- Model: "source_calibration.single_spot.track.PM"
- Type: integer
- Mutability : variable
- Variable mode : interval
- Domain: [0;5]
- Default value : 0

8. Parameter "generator/if_source_calibration_single_spot/position":

Calibration source position in a track

- Full path: "vertexes:generator/if_source_calibration_single_spot/position"
- Model: "source_calibration.single_spot.position.PM"
- Type: integer
- Mutability : variable
- Variable mode : interval
- Domain: [0;2]
- Default value : 0

Registry "primary_events"

SuperNEMO demonstrator primary events generation

- Display name: "Primary events"
- Top variant model: "peg.VM"
- Number of supported parameters: 3
 - "generator" (description)
 - "generator/if_versatile/particle" (description)
 - "generator/if_versatile/energy" (description)

Description of parameters

1. Parameter "generator" :

The selected primary event generator

- Full path: "primary_events:generator"
- Model: "peg.generator.PM"
- Type: string
- Mutability: variable
- Associated groups :
 - "Background"
 - "Calibration"
 - "DBD/Ca48"
 - "DBD/Mo100"
 - "DBD/Nd150"
 - "DBD/Se82"
 - "Miscellaneous"
 - "User"
- Associated variants :
 - "if_versatile" (model: "peg.generator.vspg.VM")
- Variable mode : enumeration
- Supported string values:
 - **"Ac228"** : *Ac-228 decay*
 - Group: "Background"
 - **"Am241"** : *Am-241 decay*
 - Group: "Calibration"
 - **"Bi207"** : *Bi-207 decay*
 - Group: "Calibration"
 - **"Bi210"** : *Bi-210 decay*
 - Group: "Background"
 - **"Bi212"** : *Bi-212 decay*
 - Group: "Background"
 - **"Bi212_Po212"** : *Bi-212/Po-212 decay*
 - Group: "Background"
 - **"Bi214"** : *Bi-214 decay*
 - Group: "Background"
 - **"Bi214_Po214"** : *Bi-214/Po-214 decay*
 - Group: "Background"
 - **"Ca48.0nubb"** : *Neutrinoless double beta decay of Ca-48, 0nubb(mn)*
 - Group: "DBD/Ca48"
 - **"Ca48.0nubbM1"** : *Neutrinoless double beta decay of Ca-48, 0nubbM1*

- Group : "DBD/Ca48"
- **"Ca48.0nubbM2"** : *Neutrinoless double beta decay of Ca-48, 0nubbM2*
 - Group : "DBD/Ca48"
- **"Ca48.0nubb_rhc_lambda_0"** : *Neutrinoless double beta decay of Ca-48, 0nubb(rhc-lambda) 0+ -> 0+ {2n}*
 - Group : "DBD/Ca48"
- **"Ca48.0nubb_rhc_lambda_0_2"** : *Neutrinoless double beta decay of Ca-48, 0nubb(rhc-lambda) 0+ -> 0+, 2+ {N}**
 - Group : "DBD/Ca48"
- **"Ca48.2nubb"** : *Two neutrino double beta decay of Ca-48, 2nubb*
 - Group : "DBD/Ca48"
- **"Co60"** : *Co-60 decay*
 - Group : "Calibration"
- **"Cs137"** : *Cs-137 decay*
 - Group : "Calibration"
- **"Eu152"** : *Eu-152 decay*
 - Group : "Background"
- **"Eu154"** : *Eu-154 decay*
 - Group : "Background"
- **"K40"** : *K-40 decay*
 - Group : "Background"
- **"Mn54"** : *Mn-54 decay*
 - Group : "Calibration"
- **"Mo100.0nubb"** : *Neutrinoless double beta decay of Mo-100, 0nubb(mn)*
 - Group : "DBD/Mo100"
- **"Mo100.0nubbM1"** : *Neutrinoless double beta decay of Mo-100, 0nubbM1*
 - Group : "DBD/Mo100"
- **"Mo100.0nubbM2"** : *Neutrinoless double beta decay of Mo-100, 0nubbM2*
 - Group : "DBD/Mo100"
- **"Mo100.0nubb_rhc_lambda_0"** : *Neutrinoless double beta decay of Mo-100, 0nubb(rhc-lambda) 0+ -> 0+ {2n}*
 - Group : "DBD/Mo100"
- **"Mo100.0nubb_rhc_lambda_0_2"** : *Neutrinoless double beta decay of Mo-100, 0nubb(rhc-lambda) 0+ -> 0+, 2+ {N}**
 - Group : "DBD/Mo100"
- **"Mo100.2nubb"** : *Two neutrino double beta decay of Mo-100, 2nubb*
 - Group : "DBD/Mo100"
- **"Na22"** : *Na-22 decay*
 - Group : "Calibration"
- **"Nd150.0nubb"** : *Neutrinoless double beta decay of Nd-150, 0nubb(mn)*
 - Group : "DBD/Nd150"
- **"Nd150.0nubbM1"** : *Neutrinoless double beta decay of Nd-150, 0nubbM1*
 - Group : "DBD/Nd150"
- **"Nd150.0nubbM2"** : *Neutrinoless double beta decay of Nd-150, 0nubbM2*
 - Group : "DBD/Nd150"
- **"Nd150.0nubb_rhc_lambda_0"** : *Neutrinoless double beta decay of Nd-150, 0nubb(rhc-lambda) 0+ -> 0+ {2n}*
 - Group : "DBD/Nd150"
- **"Nd150.0nubb_rhc_lambda_0_2"** : *Neutrinoless double beta decay of Nd-150, 0nubb(rhc-lambda) 0+ -> 0+, 2+ {N}**
 - Group : "DBD/Nd150"
- **"Nd150.2nubb"** : *Two neutrino double beta decay of Nd-150, 2nubb*
 - Group : "DBD/Nd150"
- **"Pa231"** : *Pa-231 decay*

- Group : "Background"
- **"Pa234m"** : *Pa-234m decay*
 - Group : "Background"
- **"Pb210"** : *Pb-210 decay*
 - Group : "Background"
- **"Pb211"** : *Pb-211 decay*
 - Group : "Background"
- **"Pb212"** : *Pb-212 decay*
 - Group : "Background"
- **"Pb214"** : *Pb-214 decay*
 - Group : "Background"
- **"Ra226"** : *Ra-226 decay*
 - Group : "Background"
- **"Se82.0nubb"** : *Neutrinoless double beta decay of Se-82, 0nubb(mn)*
 - Group : "DBD/Se82"
- **"Se82.0nubbM1"** : *Neutrinoless double beta decay of Se-82, 0nubbM1*
 - Group : "DBD/Se82"
- **"Se82.0nubbM2"** : *Neutrinoless double beta decay of Se-82, 0nubbM2*
 - Group : "DBD/Se82"
- **"Se82.0nubb_rhc_lambda_0"** : *Neutrinoless double beta decay of Se-82, 0nubb(rhc-lambda) 0+ -> 0+ {2n}*
 - Group : "DBD/Se82"
- **"Se82.0nubb_rhc_lambda_0_2"** : *Neutrinoless double beta decay of Se-82, 0nubb(rhc-lambda) 0+ -> 0+, 2+ {N}**
 - Group : "DBD/Se82"
- **"Se82.2nubb"** : *Two neutrino double beta decay of Se-82, 2nubb*
 - Group : "DBD/Se82"
- **"Sr90"** : *Sr-90 decay*
 - Group : "Background"
- **"Th234"** : *Th-234 decay*
 - Group : "Background"
- **"Tl207"** : *Tl-207 decay*
 - Group : "Background"
- **"Tl208"** : *Tl-208 decay*
 - Group : "Background"
- **"Y90"** : *Y-90 decay*
 - Group : "Background"
- **"electron.100keV"** : *Electron with monokinetic energy @ 100 keV*
 - Group : "Miscellaneous"
- **"electron.1MeV"** : *Electron with monokinetic energy @ 1 MeV*
 - Group : "Miscellaneous"
- **"electron.200keV"** : *Electron with monokinetic energy @ 200 keV*
 - Group : "Miscellaneous"
- **"electron.20keV"** : *Electron with monokinetic energy @ 20 keV*
 - Group : "Miscellaneous"
- **"electron.2MeV"** : *Electron with monokinetic energy @ 2 MeV*
 - Group : "Miscellaneous"
- **"electron.3MeV"** : *Electron with monokinetic energy @ 3 MeV*
 - Group : "Miscellaneous"
- **"electron.50-2000keV_flat"** : *Electron with energy in the [50keV-2MeV] range*
 - Group : "Miscellaneous"
- **"electron.500keV"** : *Electron with monokinetic energy @ 500 keV*
 - Group : "Miscellaneous"
- **"electron.50keV"** : *Electron with monokinetic energy @ 50 keV*

- Group: "Miscellaneous"
- **"gamma.100keV"** : *Gamma with monokinetic energy @ 100 keV*
 - Group: "Miscellaneous"
- **"gamma.1MeV"** : *Gamma with monokinetic energy @ 1 MeV*
 - Group: "Miscellaneous"
- **"gamma.20keV"** : *Gamma with monokinetic energy @ 20 keV*
 - Group: "Miscellaneous"
- **"gamma.2615keV"** : *Gamma with monokinetic energy @ 2.615 MeV*
 - Group: "Miscellaneous"
- **"gamma.2MeV"** : *Gamma with monokinetic energy @ 2 MeV*
 - Group: "Miscellaneous"
- **"gamma.500keV"** : *Gamma with monokinetic energy @ 500 keV*
 - Group: "Miscellaneous"
- **"gamma.50keV"** : *Gamma with monokinetic energy @ 50 keV*
 - Group: "Miscellaneous"
- **"versatile_generator"** : *Electron with monokinetic energy*
 - Triggered variant: "if_versatile"
 - Group: "User"
- Default value: "electron.1MeV"

2. Parameter "generator/if_versatile/particle":

The particle type

- Full path: "primary_events:generator/if_versatile/particle"
- Model: "peg.generator.vspg.particle.PM"
- Type: string
- Mutability: variable
- Variable mode: enumeration
- Supported string values:
 - "alpha"
 - "electron"
 - "gamma"
 - "neutron"
 - "positron"
- Default value: "gamma"

3. Parameter "generator/if_versatile/energy":

The particle energy (monokinetic)

- Full path: "primary_events:generator/if_versatile/energy"
- Model: "peg.generator.vspg.energy.PM"
- Type: real
- Unit label: "energy"
- Preferred unit: "keV"
- Real precision: 0 keV
- Mutability: variable
- Variable mode: interval
- Domain: [1 keV;10000 keV]
- Default value: 1000 keV

Registry "simulation"

SuperNEMO demonstrator Geant4 simulation

- Display name: "Geant4 simulation"
- Top variant model: "simulation.VM"
- Number of supported parameters: 5
 - "physics_mode" (description)
 - "physics_mode/if_constructors/em_model" (description)
 - "physics_mode/if_list/id" (description)
 - "production_cuts" (description)
 - "output_profile" (description)

Description of parameters

1. Parameter "physics_mode" :

The Geant4 simulation physics mode

- Full path: "simulation:physics_mode"
- Model: "simulation.physics_mode.PM"
- Type: string
- Mutability: variable
- Associated variants :
 - "if_constructors" (model: "simulation.physics_mode.constructors.VM")
 - "if_list" (model: "simulation.physics_mode.list.VM")
- Variable mode: enumeration
- Supported string values:
 - "Constructors" :
 - Triggered variant: "if_constructors"
 - "List" :
 - Triggered variant: "if_list"
- Default value: "Constructors"

2. Parameter "physics_mode/if_constructors/em_model" :

Electromagnetic processes Geant4 model

- Full path: "simulation:physics_mode/if_constructors/em_model"
- Model: "simulation.physics_mode.constructors.em_model.PM"
- Type: string
- Mutability: variable
- Variable mode: enumeration
- Supported string values:
 - "livermore"
 - "penelope"
 - "standard"
- Default value: "standard"

3. Parameter "physics_mode/if_list/id" :

The identifier of the Geant4 physics list

- Full path: "simulation:physics_mode/if_list/id"
- Model: "simulation.physics_mode.list.id.PM"

- Type: string
- Mutability: variable
- Variable mode: enumeration
- Supported string values:
 - "CHIPS"
 - "FTFP_BERT"
 - "FTFP_BERT_HP"
 - "FTFP_BERT_TRV"
 - "FTF_BIC"
 - "LBE"
 - "LHEP"
 - "QBBC"
 - "QGSC_BERT"
 - "QGSP"
 - "QGSP_BERT"
 - "QGSP_BERT_CHIPS"
 - "QGSP_BERT_HP"
 - "QGSP_BIC"
 - "QGSP_BIC_HP"
 - "QGSP_FTFP_BERT"
 - "QGSP_INCLXX"
 - "QGS_BIC"
 - "Shielding"
- Default value: "LBE"

4. Parameter "production_cuts":

The activation flag of Geant4 production cuts

- Full path: "simulation:production_cuts"
- Model: "simulation.production_cuts_activation.PM"
- Type: boolean
- Mutability: variable
- Associated variants:
 - "is_active" (model: "datatools::basic::is_on.VM")
 - "is_inactive" (model: "datatools::basic::is_off.VM")
- Variable mode: enumeration
- Supported boolean values:
 - false:
 - Triggered variant: "is_inactive"
 - true:
 - Triggered variant: "is_active"
- Default value: true

5. Parameter "output_profile":

The output profile for Geant4

- Full path: "simulation:output_profile"
- Model: "simulation.output_profile.PM"
- Type: string
- Mutability: variable
- Associated variants:
 - "if_all" (model: "datatools::basic::is_on.VM")

- "if_calor" (model: "datatools::basic::is_on.VM")
- "if_none" (model: "datatools::basic::is_on.VM")
- "if_source" (model: "datatools::basic::is_on.VM")
- "if_tracker" (model: "datatools::basic::is_on.VM")
- Variable mode : enumeration
- Supported string values:
 - "all_details" :
 - Triggered variant : "if_all"
 - "calor_details" :
 - Triggered variant : "if_calor"
 - "none" :
 - Triggered variant : "if_none"
 - "source_details" :
 - Triggered variant : "if_source"
 - "tracker_details" :
 - Triggered variant : "if_tracker"
- Default value : "none"

Global dependency model

- Dependees : 8
 - Dependee slot [0] : "geometry:layout/if_half_commissioning"
 - Dependee slot [1] : "geometry:layout/if_basic/source_calibration/is_active"
 - Dependee slot [2] : "geometry:layout/if_basic/shielding/is_on"
 - Dependee slot [3] : "geometry:layout/if_basic"
 - Dependee slot [4] : "geometry:layout/if_basic/source_layout/if_basic/material/if_ca48"
 - Dependee slot [5] : "geometry:layout/if_basic/source_layout/if_basic/material/if_se82"
 - Dependee slot [6] : "geometry:layout/if_basic/source_layout/if_basic/material/if_nd150"
 - Dependee slot [7] : "geometry:layout/if_basic/source_layout/if_basic/material/if_mo100"
- Dependencies : 9
 - Dependency : "Ca48PrimariesDep"
 - Depender : "primary_events:generator@DBD/Ca48"
 - Input dependee slots : [4]
 - Logic : "[4]"
 - Dependency : "CalibrationVtxDep"
 - Depender : "vertexes:generator@Calibration"
 - Input dependee slots : [1]
 - Logic : "[1]"
 - Dependency : "HalfCommissioningVtxDep"
 - Depender : "vertexes:generator@HalfCommissioning"
 - Input dependee slots : [0]
 - Logic : "[0]"
 - Dependency : "Mo100PrimariesDep"
 - Depender : "primary_events:generator@DBD/Mo100"
 - Input dependee slots : [7]
 - Logic : "[7]"
 - Dependency : "Nd150PrimariesDep"
 - Depender : "primary_events:generator@DBD/Nd150"
 - Input dependee slots : [6]
 - Logic : "[6]"

- Dependency: "Se82PrimariesDep"
 - Depender: "primary_events:generator@DBD/Se82"
 - Input dependee slots: [5]
 - Logic: "[5]"
- Dependency: "ShieldingVtxDep"
 - Depender: "vertexes:generator@Shielding"
 - Input dependee slots: [2]
 - Logic: "[2]"
- Dependency: "SourceVtxDep"
 - Depender: "vertexes:generator@Source"
 - Input dependee slots: [3]
 - Logic: "[3]"
- Dependency: "Tracker1VtxDep"
 - Depender: "vertexes:generator@Tracker1"
 - Input dependee slots: [3]
 - Logic: "[3]"