SAISINUC 2021

Installation guide

Sylvain Leblond, Christophe Dulieu, Xavier Mougeot

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Contacts:

- Christophe.DULIEU@cea.fr
- Sylvain.LEBLOND@cea.fr
- Xavier.MOUGEOT@cea.fr

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1 Startup guide

This section deals with basic concepts about Saisinuc 2021 version and provides support for installation and configuration.

1.1 Introduction to Saisinuc 2021

Saisinuc 2021 is a nuclear decay database and an associated editor developed by LNE-LNHB since 1992. After many years of development, it has become the main software tool used by DDEP to perform evaluations and edition. The Saisinuc 2021 package is composed of two independent files:

- The DDEP database (usually named Donnees.mdb)
- The Saisinuc 2021 software (currently named Saisinuc_2021.mdb)

The Donnees.mdb file is a Microsoft Access database in which all the decay information of the various radioisotopes evaluated by DDEP are gathered. The file has no specific user interface and is a simple collection of tables for all the nuclear and atomic radiation properties of the decays. Each evaluator uses his own database to modify decay data when performing evaluation or study. The main database is maintained at LNHB and is handled by a single DDEP member (C. Dulieu) to avoid any consistency conflict. Once a new evaluation has been reviewed and validated for publication, a copy of the evaluator database is sent to LNHB in order to perform the update of the main DDEP database. At any time, a user can request an up-to-date copy of the main database.

The Saisinuc_2021.mdb file is a Graphical User Interface (GUI) developed with Microsoft Access to easily edit the database. All along the years, several decay data evaluation tools have been developed in order to perform DDEP evaluations. In particular, external programs like BrIcc, BetaShape, Emission, etc. have been integrated in the GUI in order to simplify the evaluation process. Finally, some nuclear and atomic databases (such as the latest Atomic Mass Evaluation database) are directly included in the software and provide an easy way to access the relevant information during an evaluation. Due to its historical development, the Saisinuc software can only be used with Microsoft Access 2000, the next versions of Access being not compatible (see the Installation guide for more details).

It is **strongly recommended** to all DDEP evaluators to use the Saisinuc 2021 software to perform the evaluation and update the database. Not only the package provides simple and comprehensive tools for the evaluation, but it also contains a large number of internal verification checks to ensure that data are properly formatted.

1.2 Installation guide

The installation of Saisinuc 2021 software and its two external programs is presented below. The requirements for the installation are:

- Operating System: Windows 7 or 10

  Neither Linux distributions nor macOS are supported. Regarding the older versions of Windows OS, Saisinuc 2021 might work but no support will be provided by the LNHB local team. In the following manual all the examples and guides will be given assuming usage of Windows 10.
- Administrator rights on the computer during the installation process.
- Executable installer of
  - Microsoft Access 2000 Runtime
  - BetaShape
  - BrIcc
  - Emission

All the required packages for Saisinuc 2021 and external programs can be found online on a dedicated webpage accessible only to DDEP evaluators: http://www.lnhb.fr/nuclear-data/tools-for-evaluators. To have access to the webpage, please contact the DDEP coordinator Xavier MOUGEOT.

In order to minimize the download time of the files, most of them have been compressed in zip format. The user needs then to extract the files first, by right clicking on each file and selecting the option *Extract All…* as displayed in Figure 1.

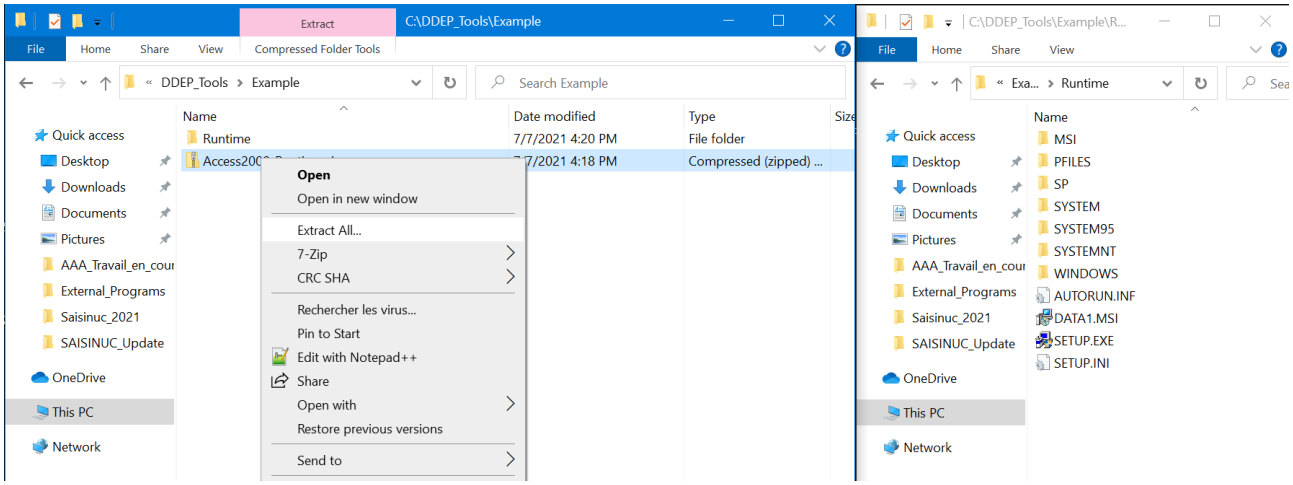


Figure 1: Extracting compressed files

Important notes:

- Some of the evaluation tools are similar with ENSDF ones (such as BrIcc for example). However, most tools had to be customized in order to be integrated in the Saisinuc 2021 software. Therefore, the most recent version available online (for example on ENSDF webpage) might not work with Saisinuc 2021. **We strongly recommend** to all the evaluators to use, for any DDEP evaluation, only the software and tools provided in the DDEP evaluators' webpage.

- Due to recurrent issues caused by Microsoft Office updates and by some Saisinuc updates **we strongly recommend to install** Microsoft Access 2000 Runtime, Saisinuc 2021 and all the external programs in a dedicated folder **outside** of C:\Program Files\ or C:\Program Files (x86)\. For example, if C: is the letter of the drive on which one wants to install Saisinuc 2021, we advise to install all tools in a new folder with the following path C:\DDEP_Tools\. In the rest of the document, this path will the taken as an example for the installation.

Below, a step-by-step installation guide is provided to anyone wishing to have a fully operational version of Saisinuc 2021.

1.2.1 Microsoft Access 2000 Runtime

The first step is to install a functional version of Microsoft Access 2000. An installer of Microsoft Access 2000 Runtime is available on the DDEP evaluator's tools webpage (as mentioned previously, Saisinuc 2021 software will not work with newer versions of Access).

The runtime can be installed using the following guideline:

- Download the file *Access2000_Runtime.zip* and unzip it to a temporary folder
- In the folder, run the *Setup.exe* executable
- Once the install setup has started, use the Configure option to select the desired installation path of the runtime by selecting the Customize… option (see Figure 2)
  In this example the installation directory has been chosen to be C:\DDEP_Tools\Access2000Runtime\
- Select *Install now*

After a few seconds, the installation should be completed. In some cases, error messages can pop up specifying missing files or components: they should be ignored. Once the installation is completed, Microsoft Access runtime can be used to read and edit existing database.

In case of an already existing version of Microsoft Access.

If ever another Microsoft Access software is already installed on the computer, it is still possible to install Access 2000 runtime version without damaging the current Access installation. However, one should be careful not to install the runtime on the same directory as the current Microsoft Access software.

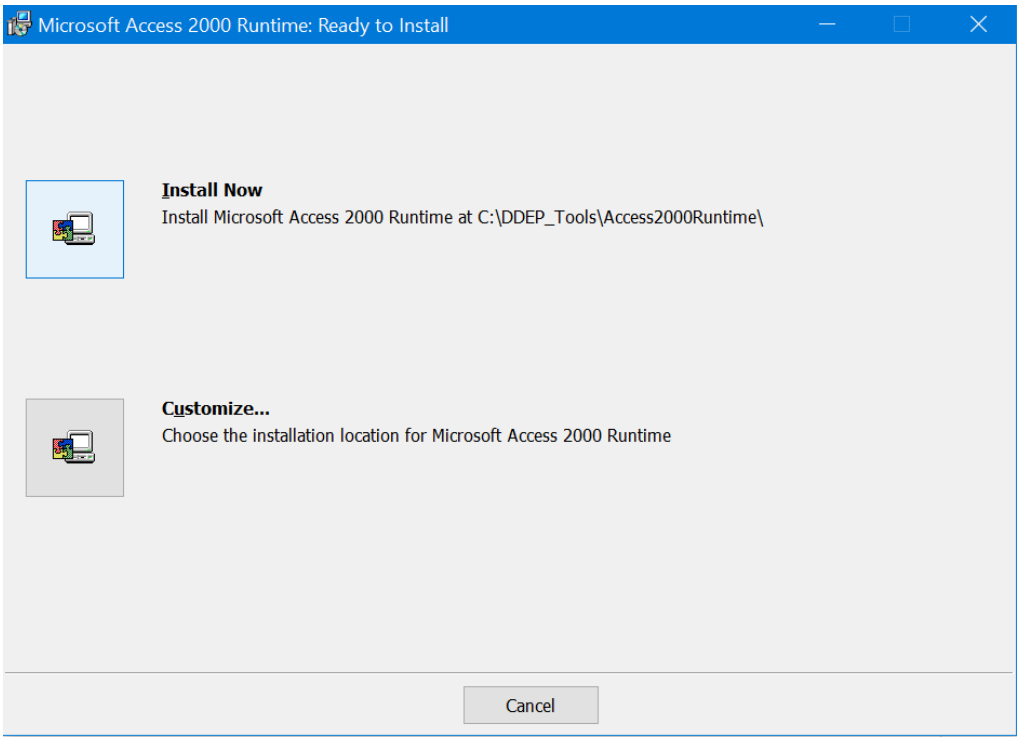


Figure 2: Installation setup of Microsoft Access 2000 Runtime

Important notice: If Microsoft Access Runtime was already installed on your computer, instead of the upper window, you should see one with two buttons: "**Repair Microsoft Access 2000 Runtime**" and "**Remove Microsoft Access 2000 Runtime**". You can then cancel this installation and proceed to the next step.

1.2.2 Saisinuc 2021 package

Once Microsoft Access Runtime is installed, the Saisinuc 2021 package can be used. The latest versions of the Saisinuc 2021 software and of the Saisinuc_2021 database can be obtained from the Tools for evaluators' webpage by downloading the Saisinuc_2021.zip file. The compressed file contains the following items:

- ***Saisinuc_2021.mdb***
  The evaluation program
- ***Donnees.mdb***
  A clean database for evaluator containing few examples.
- ***Comments***
  A folder containing the comments file associated with the example in the provided database.
- ***Help***
  A folder containing an explanation for setting the path to database.
- ***Saisinuc_2021.lnk***
  A shortcut for launching the Saisinuc 2021 program, if installed in the recommended directory. It can be edited to suit your needs if you installed the program in another location.
- ***Saisinuc_2021.ico***
  An icon to distinguish Saisinuc 2021 program (more explanations provided below)
- ***Saisinuc_2021_Installation guide.pdf***
  The installation guide of Saisinuc 2021 (this manual)
- ***Saisinuc_2000_UserGuide.pdf***
  The user guide of the Saisinuc 2000 program

It is recommended to create a new directory to copy all these documents (for example C:\DDEP_Tools\Saisinuc_2021\). Saisinuc 2021 does not require any additional installation step. Once copied in the appropriate directory, the software can be directly used by double clicking on the provided link, or by opening the file *Saisinuc_2021.mdb* with Microsoft Access 2000. If the installation has been done correctly, the loading screen displayed in Figure 3 should appear, then the main window.

Note: The first time Microsoft Access Runtime is used, the user will be asked to register Name and Initial information in order to use the software. These information are not used any further and might be filled with any value.

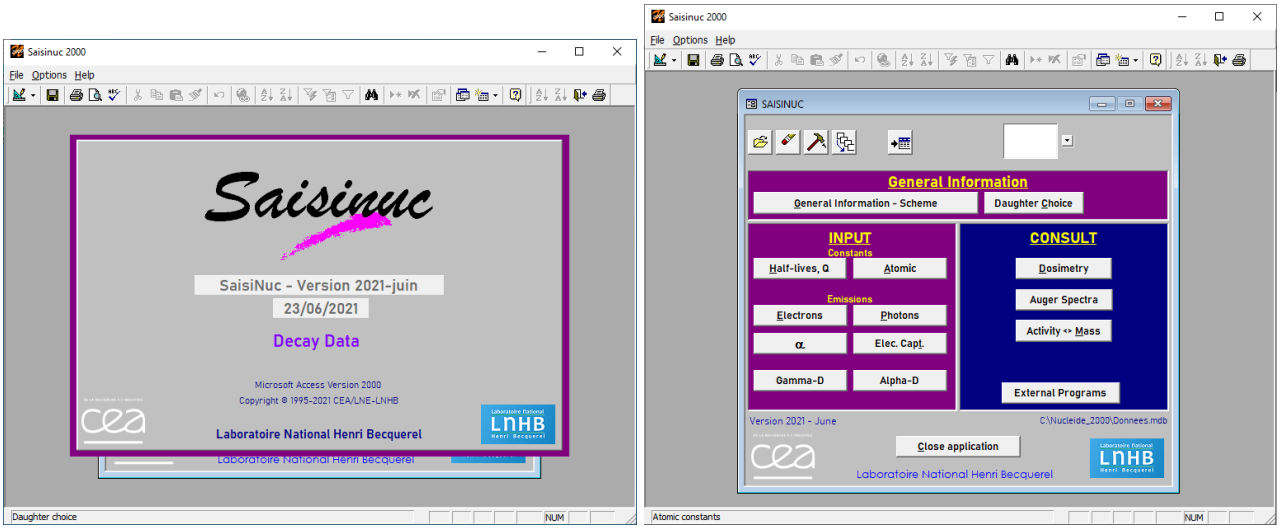


Figure 3: Saisinuc 2021 loading screen and main window

Finally, if the provided shortcut does not work, it can be useful and recommended to create one to launch Saisinuc 2021 from anywhere and to set a dedicated icon to distinguish it more easily.

- To create a shortcut, right-click on the *Saisinuc_2021.mdb* file and select the field *create a shortcut*. By default, the created shortcut is named "*Saisinuc_2021.mdb – Shortcut (see* Figure 4*)*. The shortcut can be renamed as desired, for example *Saisinuc 2021*. It can be moved anywhere to use Saisinuc quickly (it is recommended to move it on the Desktop).

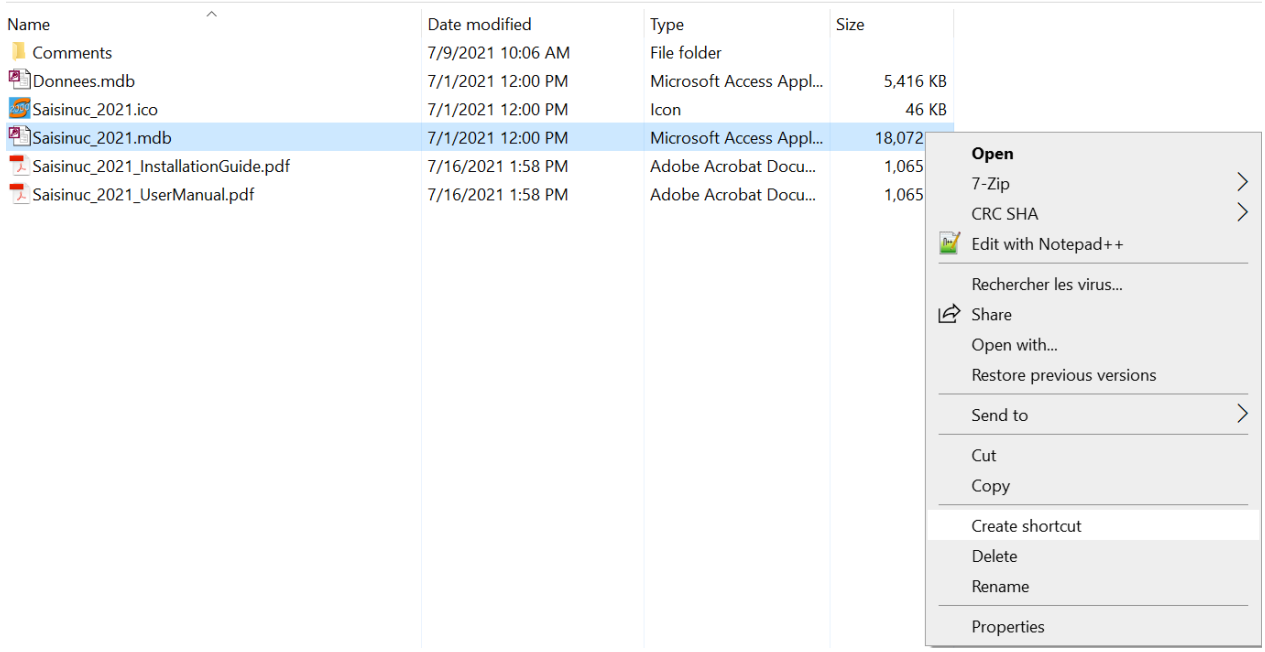


Figure 4: Creating a shortcut for Saisinuc

- To change the icon of the shortcut, right click on it and select the field *Properties*. In the newly opened window, select the tab *Shortcut* and click on the *Change Icon* Button. Then use the *Browse* option in the new window and finally select the Saisinuc_2021.ico file (this file is located in the same folder as the Saisinuc program). For a visual guide the user can refer to the Figure 5.

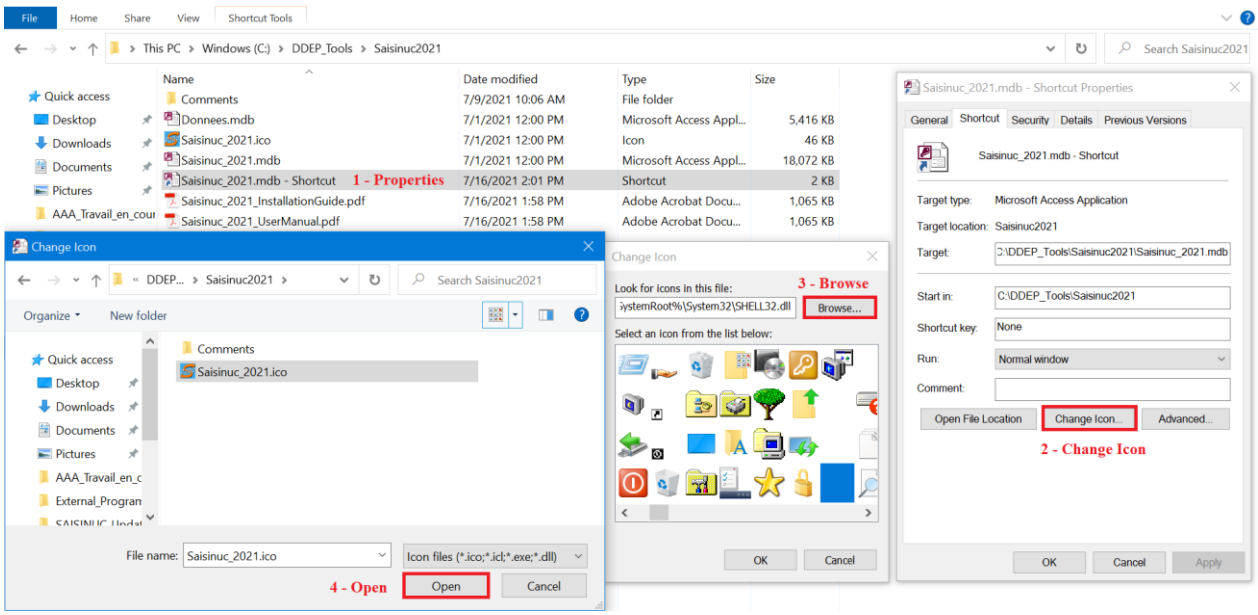


Figure 5: Defining a new icon for the shortcut

Saisinuc 2021 is now ready to use. As detailed in section 1.3, Saisinuc requires to be configured to use a specific database (usually named Donnees.mdb). A clean database (containing an example for each decay type) is available for download at the Tools for evaluators' webpage.

1.2.3 External programs

Once Microsoft Access 2000 and Saisinuc 2021 software have been installed, the user can start working on evaluations. However, several external programs are mandatory in order to be able to perform some of the calculations required for an evaluation. These programs are not necessary for accessing evaluation data. The list of all external programs is given below:

- AME2020
- BetaShape
- BrIcc
- Emission

In this section, a simple installation guide is provided for these external programs. Even if it is not mandatory, it is recommended to install all these programs in a dedicated directory, similar to the one used for Saisinuc. In this guide, the tools are installed in the C:\DDEP_Tools\External_Programs\ directory. For each external program it is recommended to use a different sub directory (named according to the program's name).

General case

Similarly to Saisinuc_2021.mdb, some of the external programs are already compiled and do not require any specific additional installation process. For such external programs, the users just need to download the executables from the Tools for evaluators' webpage and copy them in the directory of their choice. Later on, the program can be run from the provided executable.

The list of external programs requiring only a simple copy to a new folder is given below:

- AME2020
- BetaShape

For the others, the installation process is detailed below.

BrIcc program

BrIcc is a program mainly written by T. Kibédi. When no experimental data are available, DDEP recommends using the BrIcc software to evaluate the coefficients for internal conversion transitions. To simplify the evaluation process, a dedicated version has been developed for SAISINUC and provides an integrated way to calculate the internal coefficients.

To proceed to the installation of BrIcc within the SAISINUC framework, the requirements are:

- The installer of BrIcc for Saisinuc (BrIccSV23setup.exe)
- The administration rights on the computer

The BrIcc installer can be found on the dedicated Tools for evaluators' webpage. **Be careful,** the latest version of BrIcc available on the ENSDF evaluator tools webpage is not working with SAISINUC, **the users should use** the one provided by DDEP.

The installation of BrIcc is simply performed by running the BrIcc installer and by specifying the desired path of installation (C:\DDEP_Tools\External_Programs\BrIcc is recommended). However, in most cases, it is necessary to set up BrIcc environment variable to be able to use it.

To do so, a detailed explanation is given below for Windows 10.

- On the desktop press “Windows key + x”. It will open a list as displayed below in Figure 6.

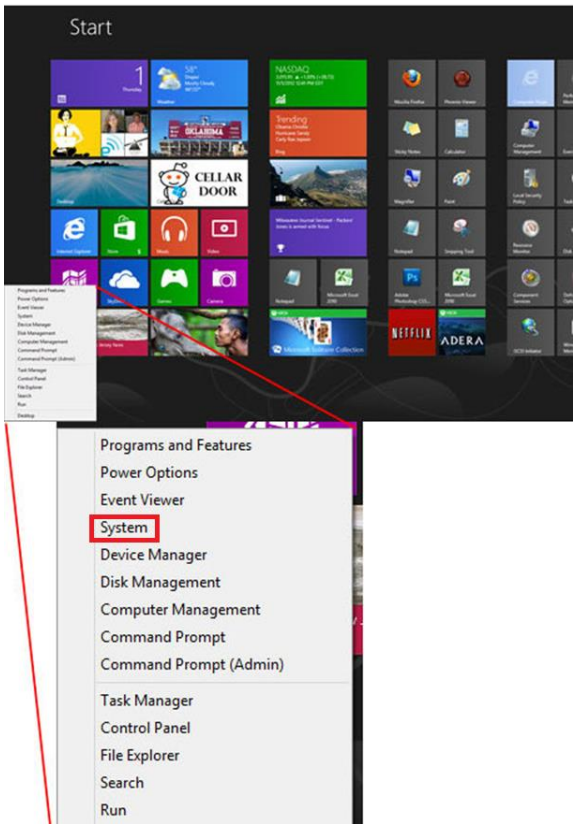


Figure 6: Windows system settings

- Select the *System* option from the list
- Type in the search bar (top left corner) *Edit environment variable*s *for your account* and click on it.
- Create a new Variable called “BrIccHome” with the value equal to the path where BrIcc has been installed. An example is provided in Figure 7.

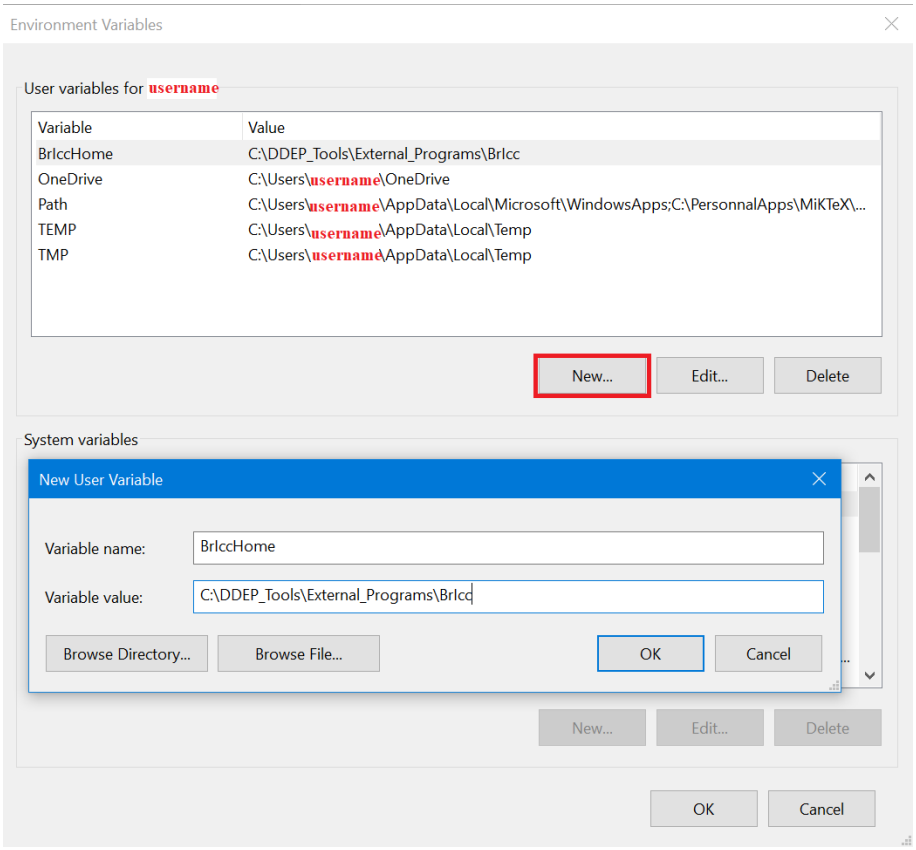


Figure 7: Adding a new environment variable for BrIcc

Emission

Emission is a code written at the PTB and is used in Saisinuc to calculate the X-ray and Auger electron emission probabilities from the atomic vacancies created by the nuclear processes.
The installation is very simple: the source directory "Emission_2013" can be downloaded from the Tools for evaluators' webpage. To work with Saisinuc it is required to have an executable file entitled *emission.exe* in the folder. The folder already contains two compiled binary files: *emission_32.exe* and *emission_64.exe*, each of them being compiled for different system architecture (32 bits and 64 bits). One just have to copy the suitable file (depending on the system used to run Saisinuc) and rename it *emission.exe*. In case of a doubt, most recent computers are using 64-bit architecture. An example of the *Emission_2013* folder and how to handle the files inside is presented in Figure 8.

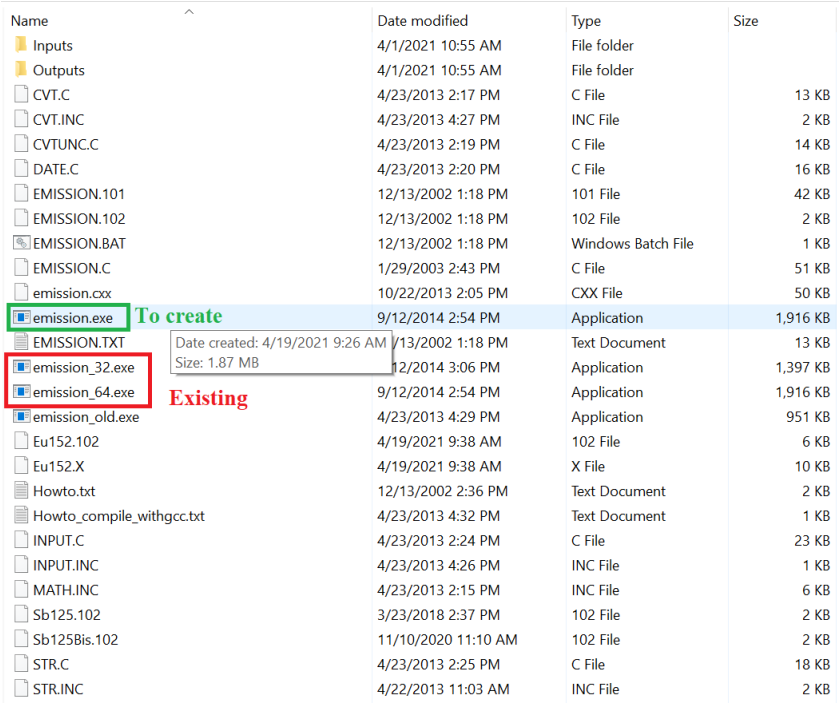


Figure 8: Emission software folder

1.3 Saisinuc configuration

Once all the external software programs have been installed, Saisinuc needs to be configured in order to specify the location of the external programs:

- Open Saisinuc
- Click on *External Programs* at the bottom right of the main window
- For each software, specify the installation path (an example is given in Figure 9)

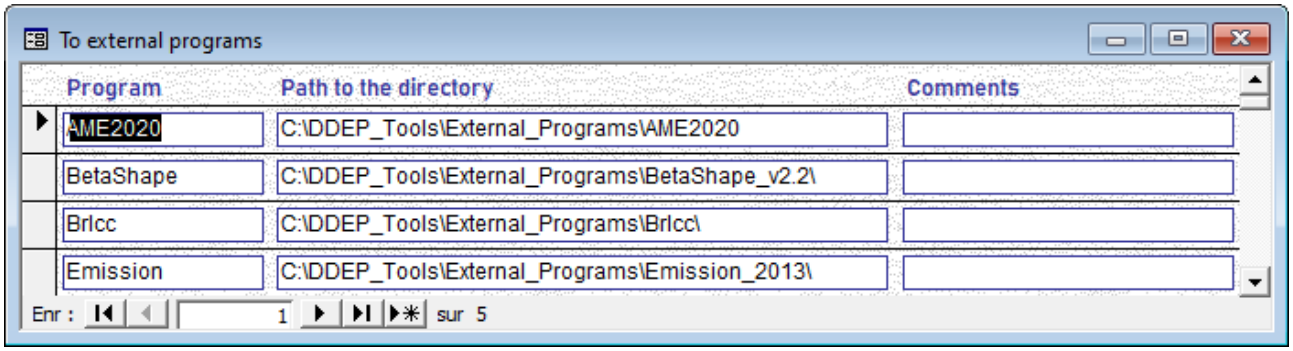


Figure 9 : Saisinuc external programs configuration