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**Author(s):** Grieve, Tristan Sumner (Avery)  
Kulesza, Joel A.

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# Installing MCNP6.2 on Microsoft Windows

Avery Grieve & Joel Kulesza

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## 1 Video Description

This video shows how to install the MCNP code, version 6.2, on a Microsoft Windows 10 computer. After installation, the Xming software is installed, a quick calculation is performed, and geometry is plotted. At this point, this setup is ready for use in an MCNP classroom setting and/or for performing calculations of the viewer's own creation.

The Godiva MCNP input file used in this video is available at <https://mcnp.lanl.gov/include/g1.txt>

More information is available at the MCNP website: <https://mcnp.lanl.gov>

Timestamps:

00:00:00 Opening

00:00:26 Getting Started

00:01:03 Copying Installation Files (Steps 1 & 2)

00:02:23 Backing up Installation Files

00:02:58 Installing (Steps 3 & 4)

00:03:42 Standard Installation Testing (Step 5)

00:04:49 Installing Xming

00:06:10 Example Calculation & Plotting

Main terminal commands used:

```
INSTALL_620.bat
```

```
INSTALL_620.bat test
```

```
mcnp6 i= g1.txt
```

```
mcnp6 ip i= g1.txt
```

## 2 Script

In this video we will install and test the MCNP code, version 6.2, developed at Los Alamos National Laboratory on a computer running Microsoft Windows. This software is generally obtained from the Radiation Safety Information Computational Center, also known as RSICC, at Oak Ridge National Laboratory.

I am using Microsoft Windows 10, but the steps should be the same for other recent versions of 64-bit Windows operating systems.

We first insert disc 1 from RSICC in our DVD drive, open Windows Explorer, navigate into the disc1 directory, and open the “how\_to\_install.html” file in our web browser. Next, we follow the link to the installation instructions at the top of the page.

We will be following the steps in this file, and we will also go beyond these steps by installing the Xming application, ensuring that it is configured correctly, and showing how to run a quick calculation and look at geometry.

One should certainly read and follow all of these instructions, but I’ll begin by scrolling down to Step 1.

We start by making a directory on our hard drive in a location that we have write permissions for and copying the files and directories from the DVD to it. In my case, this directory is C:\MCNP62.

As such, we make the directory and continue to Step 2.

First, we go back to the DVD’s disc1 directory, select all files and directories within it, copy them, and navigate back to C:\MCNP62 and paste what we copied. This copying process will take some time.

Next, we repeat the process for disc 2 by ejecting disc 1, inserting disc 2, navigating to it, selecting the “more data” directory on it, copying the directory, and pasting it into the C:\MCNP62 directory. As before, this copying process will take some time.

Finally, we repeat the process for disc 3 by ejecting disc 2, inserting disc 3, navigating to it, selecting the “more data” directory on it, copying the directory, and pasting it into the C:\MCNP62 directory. Again, this copying process will take some time.

At this point what we have on our hard drive should look like what is listed in the webpage we’re viewing. If so, we’re ready to proceed to Step 3. However, to avoid copying everything again in case the installation fails, this is an excellent time to copy the entire MCNP62 directory to a temporary backup directory like C:\MCNP62\_BACKUP. Taking this approach alongside the typical installation process should require no more than 75 GB of free hard drive space.

Now, we continue to Step 3.

We open a command prompt window found by searching for “cmd”. Once the command prompt is open, navigate to the C:\MCNP62 directory such as using the cd, change directory, command. We then run the installation script by typing “install\_620.bat” and pressing the ENTER key.

This is an excellent time to take a short walk, get a coffee, or something else. It is best to not otherwise use the computer during this time to avoid interfering with the installation.

Now, we close the command-prompt window, which satisfies Step 4, and we move to Step 5.

On the Desktop, we double click on the square blue MCNP6.2 icon, which launches a new command window that is configured to run the MCNP code.

Next, we navigate to the C:\MCNP62 directory and run the installation tests by typing “install\_620.bat test” and pressing the ENTER key. This will again take a while, but the computer can be used for other tasks as long as this window is not closed.

When the installation tests are done, we should see results like those shown, with no differences found. If there are differences found, that may be acceptable, but it is up to you to examine the differences to understand whether they are significant, indicating an error, or insignificant, suggesting numerical roundoff differences. These differences are rare but not unheard of.

We have now successfully installed the MCNP code and performed typical installation testing. Next, we will do a couple tests usually performed at the outset of each MCNP class that is taught by Los Alamos National Laboratory.

Before we begin, we will install the Xming software to let us use the X11-based geometry, tally, and cross-section plotter that comes with MCNP6.2. To install Xming, we search for “Xming” on Google, navigate to the SourceForge website that hosts it, click the large green download button, wait, and then download the software. We can now leave the SourceForge website.

Once Xming is downloaded, click on the installer to launch it. We do not require administrative access to install Xming if we change a few settings. First, change the installation path to a directory that you have permission to write to such as C:\Xming. Click Next. Now, uncheck the top three checkboxes and don't install an SSH client. Click Next. Keep the proposed Start Menu folder and click Next. Select "Create a desktop icon for Xming" and click Next. Click Install. Finally, click Finish.

Looking in the system tray in the lower-right hand corner near the clock, we can see Xming's "Black X" icon and if we mouse over it, we see the server's details. This must be running to use the MCNP6.2 X11 plotter.

To enable our testing, we need an MCNP input file and a place to run our calculation. Make a new directory for MCNP calculations at C:\WORK.

We'll use a model of the Godiva critical assembly, which is a roughly 8.7 cm radius sphere of highly enriched uranium. We can download the file from the MCNP website, where the hyperlink we use is in this video's description. Download the file to our C:\WORK directory.

Finally, launch the MCNP6.2 command window by double-clicking the square blue icon on the Desktop. Navigate to C:\WORK.

First, we'll run the calculation. To do this, we type `mcnp6 i= g1.txt` and press ENTER. The calculation will run and we should see a k-eigenvalue result of approximately 1. This means we successfully processed the input, read and processed the necessary nuclear data, and performed particle transport and recorded the results.

Next, we'll plot the geometry to test the X11 interactive plotter. To do this, we type `mcnp6 ip i= g1.txt` and press ENTER. A window will come up prompting us to "Click here for default plot." Do so. The magenta circle represents a cross-sectional view of the Godiva sphere. Note that if we resize the window, it will appear blank. If this happens, click in the upper left, in a region about the size of a postage stamp, and a hidden button here will force the window to redraw.

We are now done with our supplemental testing. What we have observed along the way is considered success. As such, this configuration is ready for use in production or in an MCNP class.

More information on the MCNP code, its classes, a support forum, references, and other resources are available on the MCNP website at [mcnp.lanl.gov](http://mcnp.lanl.gov).