
Installation of "Quantum" *Mathematica* Add-On

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<http://homepage.cem.itesm.mx/lgomez/quantum/>

With contributions by Michael Raymer

Files must be located in the proper file location in order to be able to load the Quantum packages with the Needs command and to have the documentation in *Mathematica's* Documentation Center.

Microsoft Windows Instalation

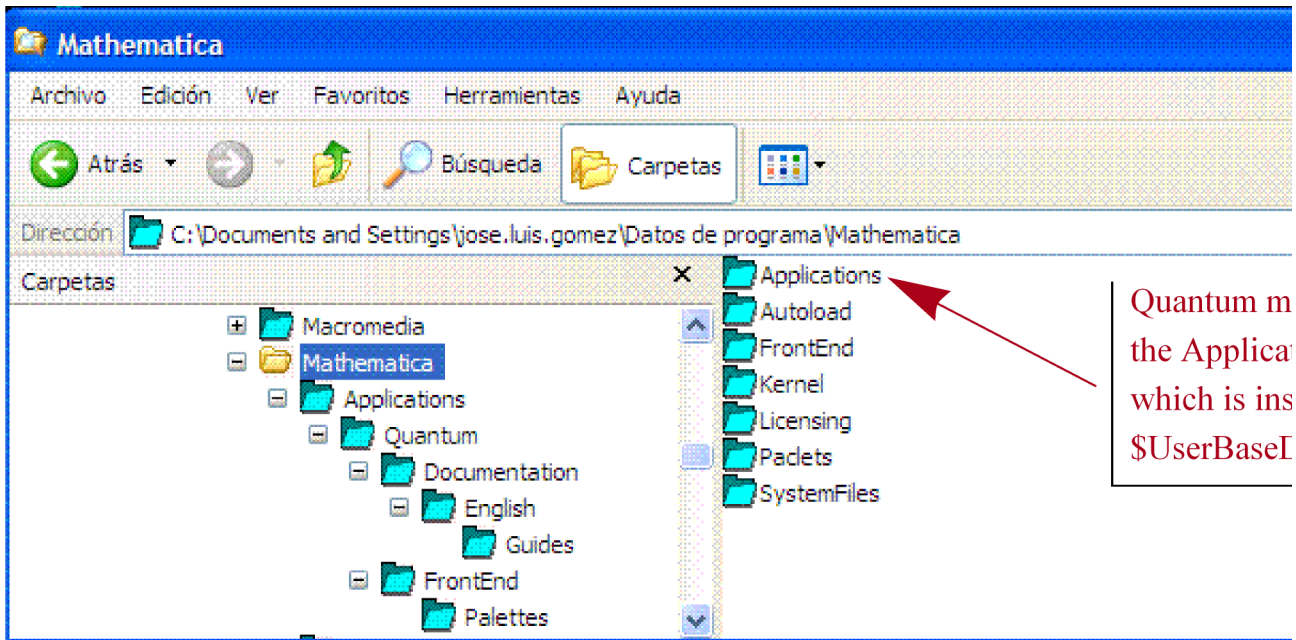
All the files will be located inside the directory specified by the value of *Mathematica's* variable **\$UserBaseDirectory**. In the computer where this document was generated, this is the value of **\$UserBaseDirectory** (when you write **\$UserBaseDirectory** and press the at the same time the keys **[SHIFT]-[ENTER]** in your *Mathematica*, you will get the **\$UserBaseDirectory** in your computer, which will be different from the one shown in this example):

```
$UserBaseDirectory
```

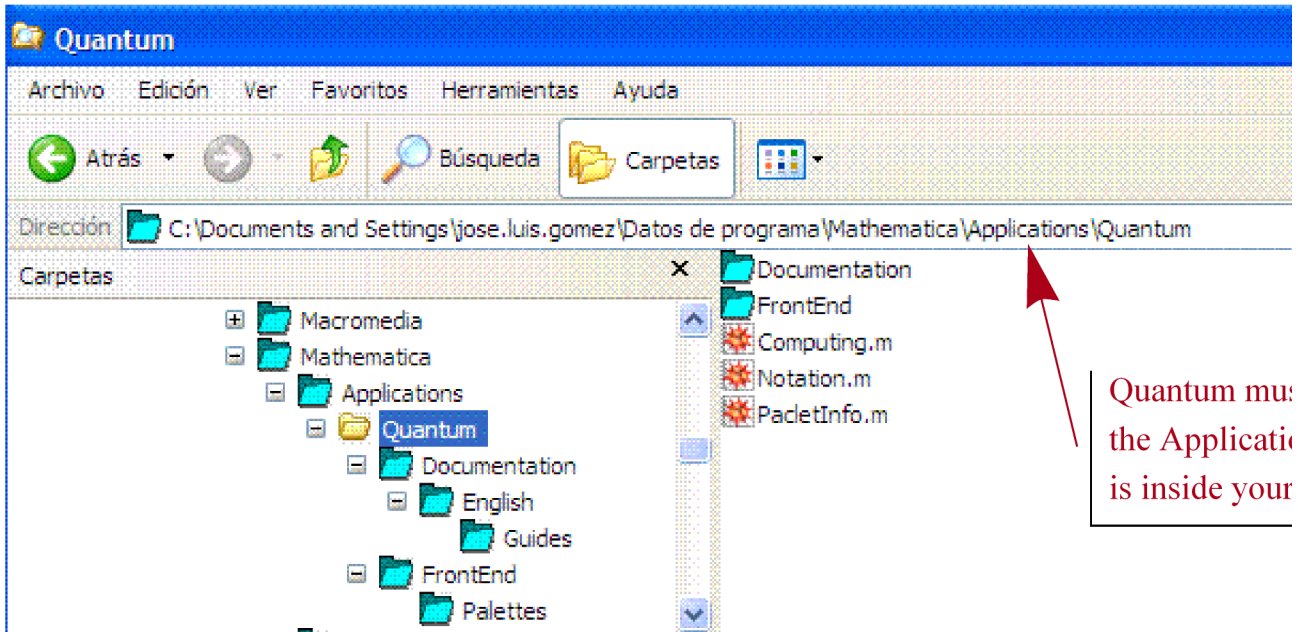
```
C:\Documents and Settings\jose.luis.gomez\Datos de programa\Mathematica
```

In the following image you can see the Windows Explorer opened in the **\$UserBaseDirectory** of my computer. Remember that in your computer it will be a different location, the one that you obtain when you evaluate **\$UserBaseDirectory** in your *Mathematica*.

Important: In order to be able to see some of the folders, you might have to select "Tools" , "Folder Options", "View", "Show Hidden Files and Folders"



Inside your **\$UserBaseDirectory** there must be an **Applications** directory, and inside the **Applications** directory you must unzip the file **Quantum.zip**, so that a **Quantum** directory is created. Once the unzip procedure is finished, inside the **Quantum** directory there must be the files **Computing.m** and **Notation.m**, which contain the programs of this Add-On, the file **PaletInfo.m**, which is necessary to incorporate documentation in *Mathematica's* help system, and the directories (folders) **Documentation** and **FrontEnd**. You can see the **Quantum** directory in my computer in the following image:



Quantum must be inside your Applications directory

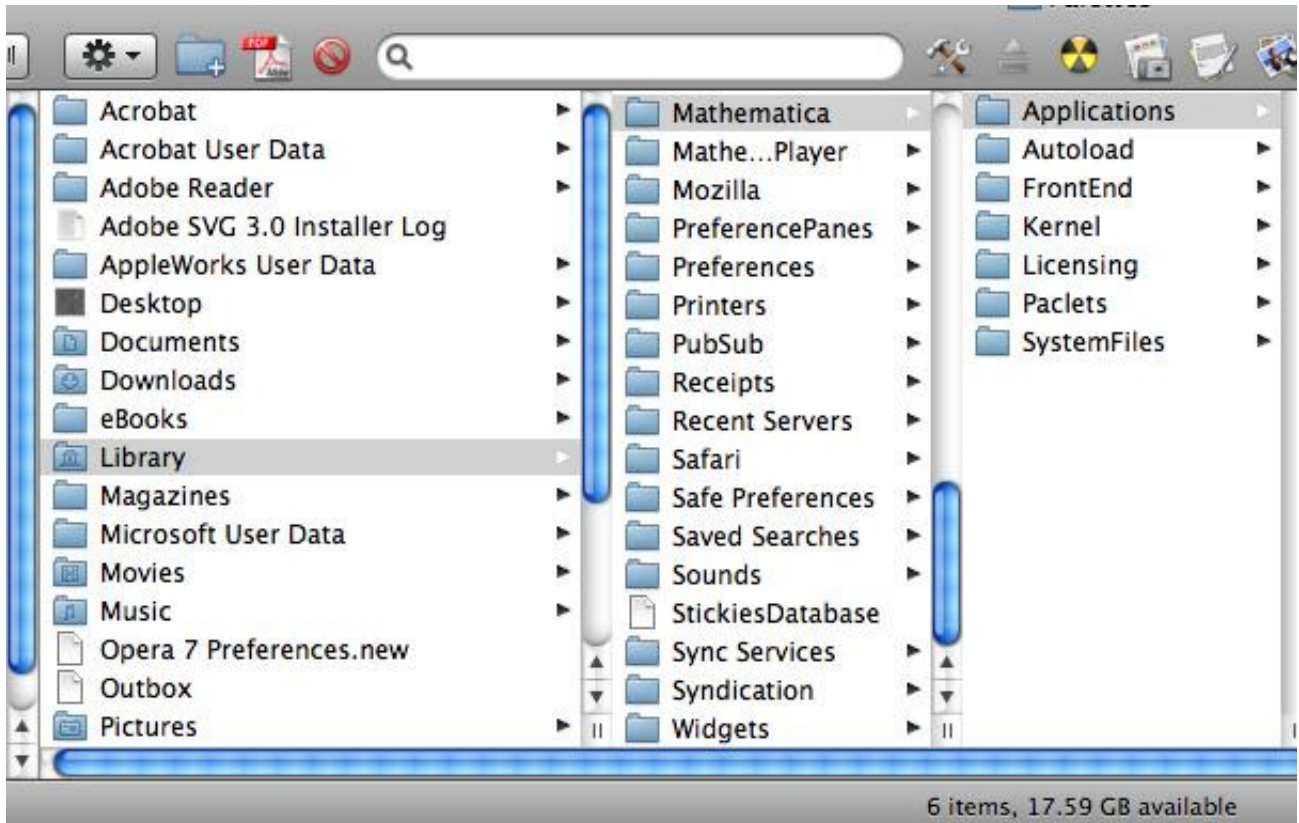
After having all the files in the proper directories you must **quit and restart Mathematica**. If the directory (folder) structure is the correct one, then you will obtain the "welcome" message after writing `Needs["Quantum`Notation`"]` and pressing at the same time the keys `SHIFT-ENTER` to evaluate (the welcome message only appears the **first time** you execute `Needs["Quantum`Notation`"]` in a fresh *Mathematica* session)

Mac OS Installation

The images included in this section are courtesy of **Michael Raymer**.

ONE. Enter Mathematica and evaluate the command **\$UserBaseDirectory**

TWO. The result of the evaluation will be a "folder structure", for example `/Users/jose/Library/Mathematica` (it will be different in your computer). Use your operative system to see the folder specified by that "folder structure". You will see a folder with the name **Applications** inside that structure:

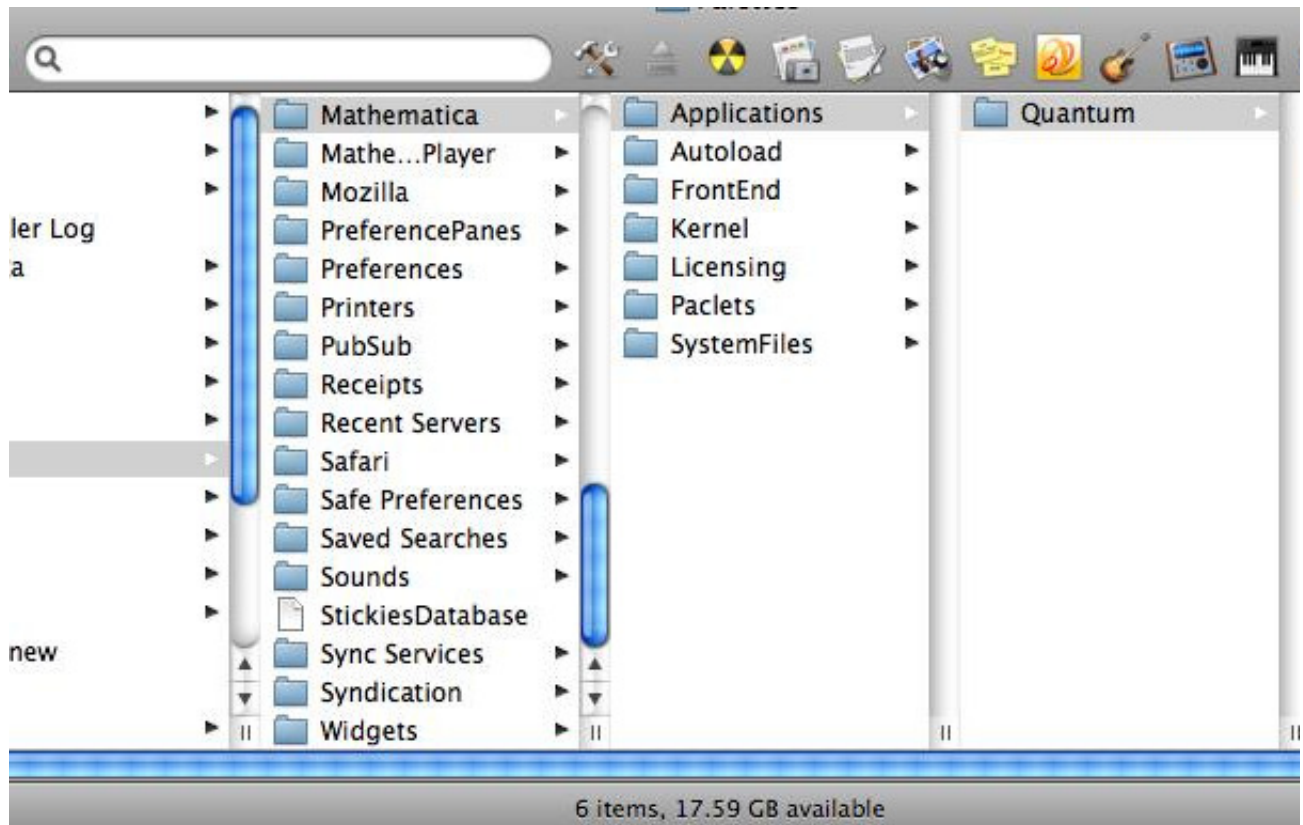


THREE. Download Quantum.zip from <http://homepage.cem.itesm.mx/lgomez/quantum/index.htm>

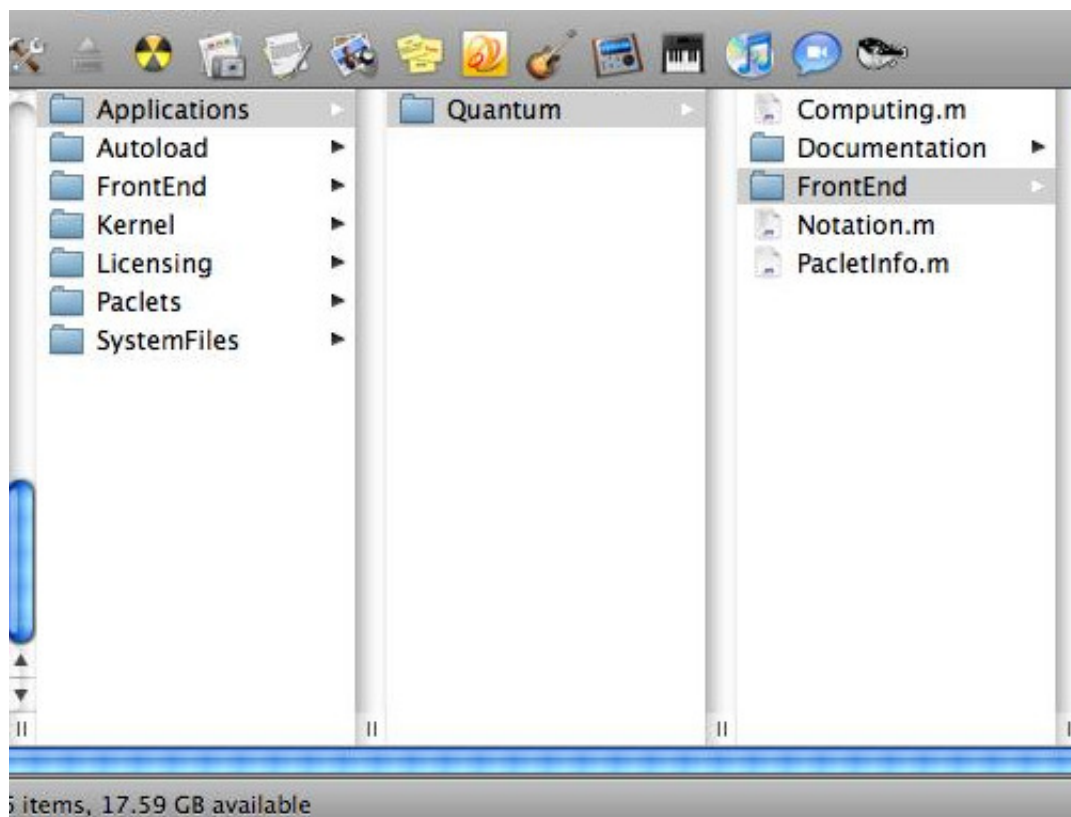
FOUR. Extract Quantum.zip on the Desktop.

FIVE. The unzipping software creates a folder on the Desktop. Rename that folder to **Quantum**. It is very important that the name of the folder must be exactly **Quantum**, it cannot be "Quantum Folder", it cannot be "Quantum " with a space, it cannot be "Quantum." with a period, it cannot be "Quantum" with quotes, etc. It has to be **Quantum**

SIX. Drag the **Quantum** folder in the **Applications** Folder. Your screen should look similar to this image:

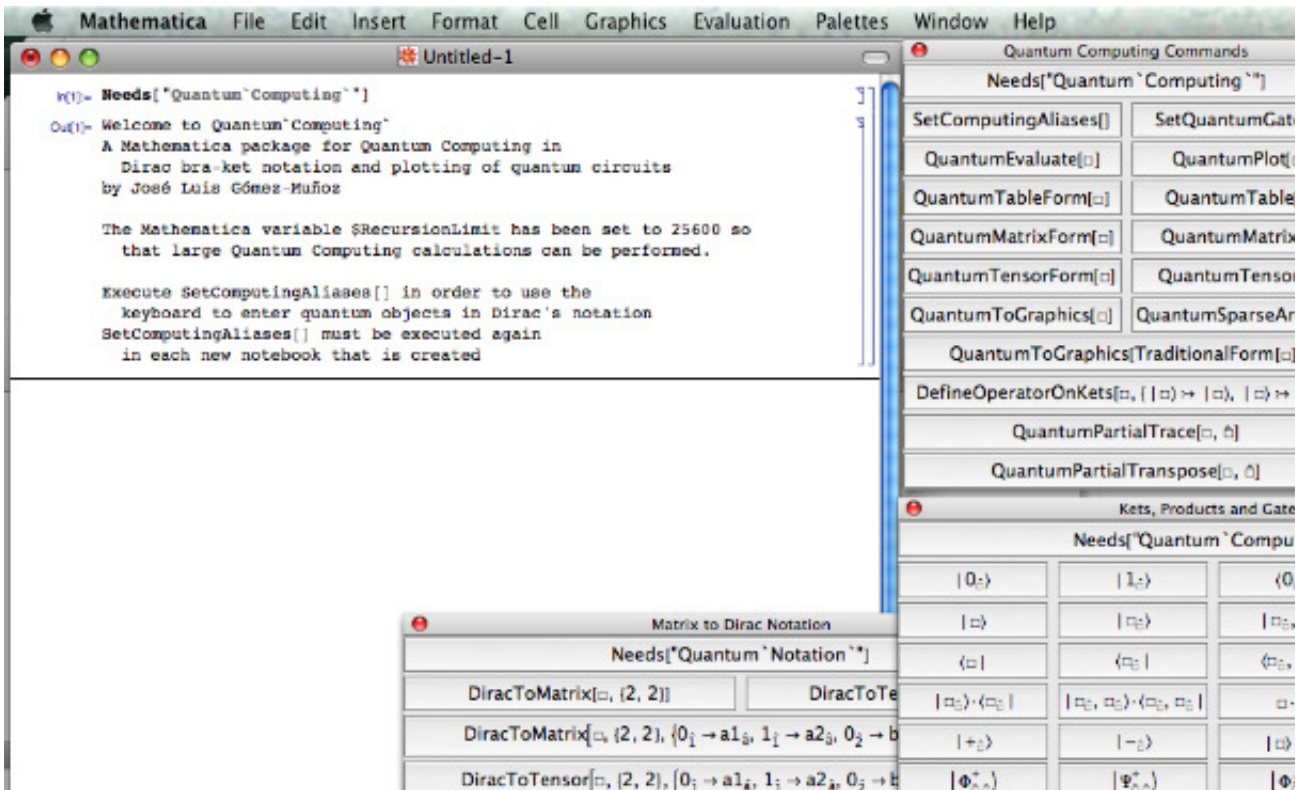


SEVEN. Verify that inside **Quantum** there are the folders **Documentation** and **FrontEnd**, as well as some other files:



EIGHT. **Quit Mathematica**

NINE. Restart *Mathematica*. Evaluate `Needs["Quantum`Notation`"]` or `Needs["Quantum`Computing`"]`. Quantum palettes (toolbars) will appear and you will see a welcome message. Those palettes can also be opened from *Mathematica*'s Palettes menu:



Installation on other operative systems

Mathematica has been designed to work the same way in different platforms (Mac, Windows, Unix, etc). Therefore, the installation procedure in any operative system should be almost the same as for Windows or Mac: Place the files in a **Quantum** directory, which will be placed inside the **Applications** directory, which is located inside the directory specified by the result of evaluating `$UserBaseDirectory` in your computer.

Verify that the package is ready to be used

If the installation is correct, you will be able to load the package and see the welcome message after evaluation of the following command. Notice that you have to use the quotes, the backquotes and the case (uppercase or lowercase) exactly as shown here:

```
Needs["Quantum`Notation`"]
```

```
Welcome to Quantum`Notation`
A Mathematica package for Quantum calculations in Dirac bra-ket notation
by José Luis Gómez-Muñoz
```

```
Execute SetQuantumAliases[] in order to use
the keyboard to enter quantum objects in Dirac's notation
SetQuantumAliases[] must be executed again in each new
notebook that is created, only one time per notebook.
```

Now you are ready to use Quantum. Start by reproducing the calculations at this page:

<http://homepage.cem.itesm.mx/lgoomez/quantum/diracnotation/diracnotation.html>

More examples can be found in the Help of your *Mathematica*, in the "Installed Add-Ons" section of the "Documentation Center", or in the Quantum home page:

<http://homepage.cem.itesm.mx/lgoomez/quantum/>