

# How to use StratRunner

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## 1 Introduction

StratRunner is a Graphical Interface for the Stratimikos package in the Trilinos Project. It is intended to assist users in defining solvers and applying those solvers to matrices. The hope is that users who are unfamiliar with the Trilinos Project or lack the technical ability to write their own C++ code will be able to access some of the power inside of Trilinos. It is worth noting that StratRunner is a Graphical User Interface and while an attempt was made to minimize the compromising of control on the users part, some simplifications have been made. That said, I feel that even power users of the Stratimikos package will find this GUI useful.

## 2 Installation Notes

In order to compile StratRunner, you must use the CMake build process that is now part of the Trilinos Project. There is no autoconfig or automake support for StratRunner. You must also have Qt 4 installed. Many Linux distributions have Qt easily available from their repositories. If your Linux distribution does not have Qt 4, you are on a Mac or Windows, or would just prefer to compile Qt from source, all the tools you need to do so are readily available for download from the Qt website (<http://www.qtsoftware.com/downloads/opensource/appdev/>).

## 3 Creating a New Solver from Scratch

When you first start StratRunner you are prompted with a choice. You can either load an existing solver or start a new one. By clicking the new solver button, you are presented with the primary StratRunner interface. Here you can modify any and all of the parameters available in the Stratimikos package. While at some points there may seem to be an overwhelming amount of parameters, know this: all parameters in StratRunner are set to appropriate defaults. If you don't know what a certain parameter does, then just leave it alone because it is already set to its default setting.

To change a particular parameter, simply right click on it's name, and select "Change Parameter" from the context menu that pops up. A list of appropriate choices or an appropriate input type will be presented to you in the form of a dialog window. If the parameter is a boolean the context menu will simply have either the option to set it true, or set it false.

To see the all of the parameters included within a particular Parameter List, simply click the "+" sign next to the name of the Parameter List. To minimize the Parameters displayed within a Parameter List, simply click the "-" sign next to the name of the Parameter List.

## 4 Loading a Solver

When you first start StratRunner you may load an existing solver that you have previously saved, or one that you have written yourself by hand (note that you must have written this solver as a .xml file). To load the solver, click the load solver button and you will be prompted with a dialog box. Navigate to the folder containing your solver and select it. Your solver will then be loaded into StratRunner and all of the Parameters will now be set to correspond with those specified in the file you just loaded.

You may also load a solver from the primary interface. All you have to do is click on the file menu and select the "Load" option.

## 5 Running a Solver

In order to run a solver you must first save the one you are currently working on. This can be done by going to the "File" menu and selecting either "Save" or "Save As". Note that if you have just loaded a file, you do not need to save it.

Once you are ready to run your solver, click on the "Run" menu and select the "Open Run Window" option. A new window will open up. This is called the "Run Window". From it you may apply the current solver that you are working on to any matrix file. Click the "Open Matrix" button to select a matrix file to use. The matrix must be in Market Matrix file format (.mtx).

Once you have selected the matrix file, you may click the "Run" button. This will use the solver you have created to solve the matrix that you have specified. All the results will be displayed in the text area in the Run Window. You may save these results to a file by clicking the "Save Output" button in the lower right hand corner of the Run Window.

## 6 Contact

If you are having any problems with StratRunner or have suggestions, please contact Kurtis Nusbaum at [knusbaum@csbsju.edu](mailto:knusbaum@csbsju.edu).

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