SpinQuest Software on Rivanna

This page is to overview the SpinQuest software installed on Rivanna. Details and specific usages of each component are described in its README.md or web page.

System-Level Files

All system-level files are located under "/project/ptgroup/spinquest". You can activate them on text terminal by sourcing "this-e1039.sh";

```
source /project/ptgroup/spinquest/this-e1039.sh
```

The components in the directory follow the standard SpinQuest package hierarchy; namely "e1039-resource", "e1039-share" and "e1039-core".

User-Level Files: e1039-analysis

The GitHub repository, "E1039-Collaboration/e1039-analysis", contains a set of user-level programs for analysis. It can be cloned and used at Rivanna as well as SpinQuest GPVM, although some setup scripts have to be modified for the Rivanna environment.

https://github.com/E1039-Collaboration/e1039-analysis

Development of e1039-core

You are recommended to use "spinquestgpvm01.fnal.gov" to develop "e1039-core" since the E1039 environment at Rivanna has been set up for normal use (=analysis) at present. But you can make your own version of e1039-core at Rivanna, by executing the following commands. Your modified source code of `e1039-core` is assumed be be placed at `~/e1039/e1039-core` .

```
cd ~/e1039
rm -rf core-build core-inst
E1039_CORE_DIR=~/e1039/core-inst
mkdir -p $E1039_CORE_DIR
cp -p e1039-core/script/this-core-org.sh $E1039_CORE_DIR/this-core.sh
source $E1039_ROOT/this-e1039.sh
./e1039-core/build.sh
```

Once the commands go fine, you can modify the source code and build it again by "./build.sh -r simulation/g4detectors" for example, where "simulation /g4detectors" should be the first package that you modified.

When you

- Build the source code in new shell (=text terminal), or
- Execute analysis macro (such as "e1039-analysis/SimChainDev"),

you have to execute the following commands;

```
E1039_CORE_DIR=~/e1039/core-inst
source /project/ptgroup/spinquest/this-e1039.sh
```

It is probably easier for you to make a setup script (like "setup.sh") to execute the commands.

Customized MC Event Generation at Rivanna

Customized files for the SpinQuest MC event generation are located under "/project/ptgroup/Akbar", such as "DY_Target_script".

The standard set of SpinQuest analysis packages are available in "e1039-analysis. The user-level files uses a modidied version of "e1039-analysis" complied under "/project/ptgroup/spinquest/e1039-analysis/module".

Development Version

A newer version of the SpinQuest software has been set up on Rivanna. It is to make use of **version 10.07 of Geant4**. "e1039-share" and "e1039-core" has been modified to be built successfully. Details of the modifications and the installation procedure can be found in the scripts under "/project/ptgroup /spinquest/devel/script".

You can activate this version on text terminal by sourcing "this-e1039.sh";

```
source /project/ptgroup/spinquest/devel/this-e1039.sh
```

The analysis modules for the MC event generation (i.e. "AnaTrkQA" and "AnaTrkQAv2") have been complied and are available under "devel/".